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The Carotid Aortic Reflex Mechanisms*

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This paper is intended to give a brief review of the functions of the carotid aortic mechanisms, and a preliminary report of experiments to investigate their importance in ether anaesthesia.

The term, carotid aortic reflexes, is used to include activity aroused from the carotid sinus regions as well as from their homologue, the region of the arch of the aorta. Functionally there are two distinct and separate types of control from the carotid aortic systems, which are called the pressoreceptor and chemoreceptor divisions.

1. The Pressoreceptor Division. This is subdivided into a/ the carotid sinuses, and b/ the arch of the aorta.

(a) The carotid sinuses are slight enlargements at the beginning of each internal carotid artery, the walls of which contain sense organs which respond to stretching or other mechanical distortion. These endings arouse impulses which travel in the short and slender nerve of Hering, or nerve of the carotid sinus, which joins the glossopharyngeal or IX cranial nerve where the latter passes through the skull.

(b) The arch of the aorta in its proximal portion also contains sense organs in its wall which respond similarly to mechanical stimulation such as stretching. The impulses thus aroused reach the brain through the vagus nerves.

2. The Chemoreceptor Division. This is subdivided into a/ the carotid bodies, and b/ the aortic bodies.

(a) The carotid bodies are vascular-nervous structures roughly the size of a pinhead, situated in the angle formed by the internal and external carotid arteries on each side. They consist mainly of a rich vascular network, fed from a short artery arising usually at the commencement of the external carotid artery. They are thus designed to

receive promptly blood from the heart. The walls of the vascular channels are lined with end organs sensitive to changes in the chemical composition of the blood, and cause impulses to be transmitted to the brain by way of the nerves of the carotid sinuses.

(b) The aortic bodies, of which there are probably two, are similar in structure to the carotid bodies, and receive blood direct from the aorta via short arteries. They respond also to changes in the composition of the blood and send impulses to the brain through the vagus nerves.

The pressoreceptor and chemoreceptor sense organs, though closely associated anatomically, exert markedly different influences in the control of bodily function, and by very different means. The pressoreceptors are sensitive only to mechanical stimulation, and not to chemical stimulation. They are more or less constantly working under the influence of the continuous blood pressure, and their activity may be modified in the nature of either an increase or a decrease. By contrast the chemoreceptors respond only to chemical stimulation, and not to mechanical stimuli, and probably (though this is not incontrovertibly proven) they are not active in the normal state of the organism. They come into play in certain emergency states.

These statements may be summarized diagrammatically as in Figure 1.

Physiological Effects

The Pressoreceptor System. Because of the continuous action of the blood pressure which tends to distend the arteries there is continuous activity of the end organs of the carotid sinuses and aortic arch. In addition there is a periodic variation in their activity due to the pulse pressure.

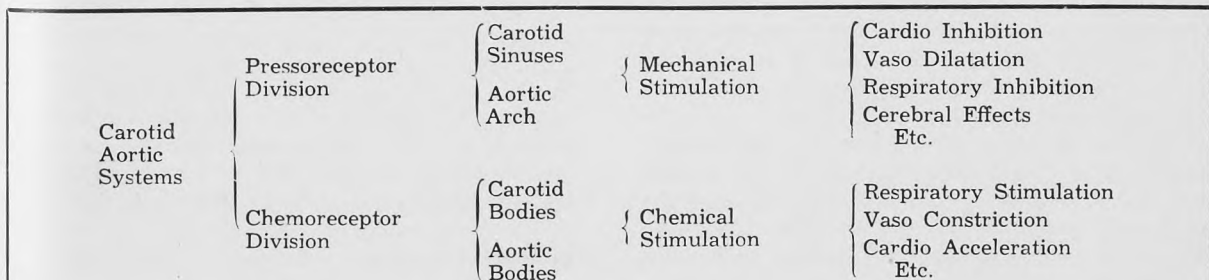


Figure 1

Diagrammatic scheme of the anatomical and physiological divisions of the carotid aortic reflex system.

*Presented before the First Annual Meeting of the Western Division of the Canadian Anaesthetists Society, 1946.

The continuous activity serves as a brake or buffer mechanism tending to maintain the blood pressure at a stable level by adjustment of cardiac and vasomotor action. The effectiveness of this control can frequently be demonstrated in experimental animals by severing the nerves of the carotid sinuses, when a prompt rise of blood pressure may

or a sudden contraction of the neck muscles, may cause such a pronounced fall of blood pressure that syncope results.

There are other reflexes aroused from the pressoreceptors which are normally of little significance. It has been well proven that these endings may cause respiratory inhibition, which

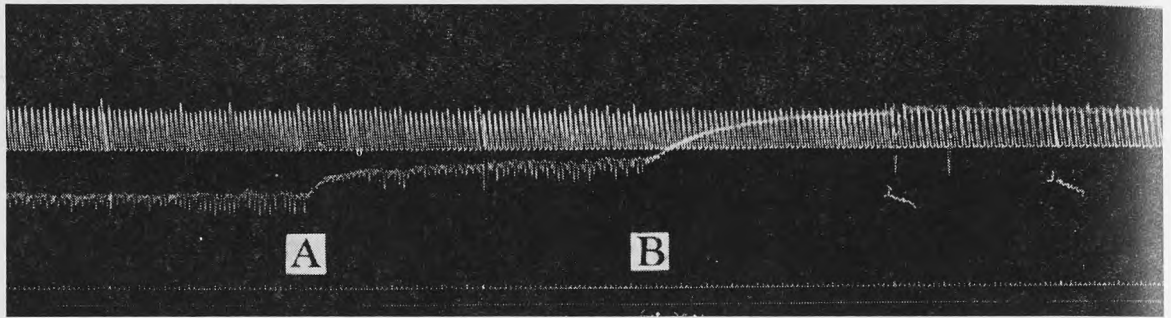


Figure 2

Effect of sudden section of carotid sinus nerves in anaesthetized (urethane) dog on respiration (upper tracing) and blood pressure (lower tracing). At A, cut

left sinus nerve. At B, cut right sinus nerve. Marked rise of blood pressure and increase in heart rate, but little effect on respiration.

occur and frequently an increased cardiac rate. (Figure 2).

These cardio-circulatory reflexes are the most important (though not the only) reflexes of the pressoreceptor system. Their mode of action is as follows. They cause a continuous inhibition of the vasoconstrictor centre due to their distention by the normal blood pressure. When the blood pressure rises there is increased stretching of the pressoreceptor endings, and a more pronounced inhibition of the vasoconstrictor centre occurs, resulting in peripheral vasodilatation. Thus the primary increase of blood pressure is checked or even neutralized.

In addition there is reflex cardio inhibition through the vagal control of the heart, continuously maintained by the carotid aortic systems as a result of the normal blood pressure. An increase of blood pressure augments this inhibition and as a result of decreased heart rate the minute output of the heart may be lowered, and the rise of blood pressure thereby checked. On the basis then of both vascular and cardiac control the carotid aortic reflexes assist in maintaining a relatively constant blood pressure.

The reflexes aroused by blood pressure changes may be produced in most individuals by manual pressure of the tissues of the neck against the transverse processes of the cervical vertebrae behind the carotid bifurcations. There may result a measurable fall of blood pressure and cardiac rate. In certain individuals there is an exaggerated response to this procedure, and mild manipulation, and even the slight pressure from a stiff collar,

may occur when the blood pressure rises markedly and suddenly. It is sometimes seen for example upon the intravenous administration of large doses of adrenalin in experimental animals, and is the explanation of the so-called adrenalin apnoea. The carotid aortic pressoreceptors may also play some part in reflexly restraining the secretion of adrenalin for upon denervating them increased circulating adrenalin has been demonstrated by crossed perfusion experiments.

Another interesting effect of the carotid aortic system has been discussed recently. It is a not uncommon experience for a convulsion to occur upon electrical stimulation of the carotid sinus nerves in experimental animals. A type of syncope and convulsion has also been described by Soma Weiss⁵ as a result of manual stimulation of the carotid sinuses, which is not accompanied by a fall of blood pressure. This reaction is believed to be due to a direct effect of the sensory impulses upon the cerebrum. Syncope and convulsions due to carotid stimulation have been classified into 3 types, vasomotor, cardiac, and cerebral.

The carotid influence upon the cerebrum is potentially dangerous in some instances. A recent report (Askey¹) describes 7 instances of contralateral hemiplegia following manual stimulation of the carotid sinuses, which lasted varying times up to several days. Transient hemiplegia, and mental aberration are also described as sequelae to this procedure, and untoward results are particularly to be considered in arterio-sclerotic patients.

The main and normal function of the pressoreceptors thus appears to be the stabilization of the blood pressure by vascular and cardiac control. But there are times when the subsidiary actions may become prominent. The sensitivity to mechanical stimulation, especially when greater than normal, introduces something of a hazard in surgical operations on the neck. Reports have been made of sudden death under such conditions for which a sensitive carotid sinus mechanism appeared to be the only explanation.

The Chemoreceptor System. The sensory endings in the carotid and aortic bodies respond to a wide variety of chemical conditions of the blood, and are insensitive to mechanical stimuli. Of the chemical states perhaps the most important is anoxemia. The physiological responses aroused by stimulation of the chemoreceptors are characteristic of the influence of these endings, no matter what the chemical stimulus is that sets them into action. The reflex responses to anoxia can therefore be discussed as qualitatively typical of chemoreceptor activity.

It is now considered that anoxemia, in the form of a reduced tension of oxygen in the arterial blood is the most important stimulus. When the tension falls from the normal value of about 100 mms. Hg. to 60 or so, active stimulation begins. This represents, in blood with a normal hemoglobin content, an oxygen content of 16 or so volumes per cent. It is to be emphasized that the tension, not the actual quantity, of oxygen in the blood is the important factor. Thus in severe anemia there may be a very low content of oxygen in the blood, though the tension may be normal, and reflex chemoreceptor activity is not aroused. Similarly chemoreceptor activity is usually not aroused in carbon monoxide poisoning, because though oxygen transport has been reduced by interference with the oxygen take-up by the hemoglobin, the tension of oxygen in the plasma may be high. This is one explanation for the severe respiratory failure that occurs in carbon monoxide poisoning.

Whereas pressoreceptor activity leads to inhibition of cardiovascular and respiratory functions, chemoreceptor activity causes increased vasoconstriction, usually (though not always) cardiac acceleration, and greater rate and depth of breathing. These effects are brought about through modification of the action of the central centres controlling them. The sense organs are slow to adapt to the stimulus, and responses continue without marked reduction in intensity for a long time. Further, the sensory endings are remarkably resistant to the damaging effects of anoxia, so that while the other tissues of the body, especially central nervous tissue, decrease in efficiency in anoxic states, the chemoreceptors actually become more active. It is this interesting

relationship which explains the usefulness of the chemoreflexes in anoxia and asphyxia.

There is much evidence to show that with the onset of an anoxic process there is, almost from the start, a depression of the cells of the brain. Only a slight and transient stimulation can be demonstrated centrally, and this can be discounted in the over-all picture of the respiratory and cardiovascular responses to anoxia. By contrast, as soon as relatively mild anoxia develops there is active stimulation of the chemoreceptor endings, whose **reflex** effects upon the central nervous system, especially upon the vital centres controlling respiration, blood pressure and heart rate, are augmented. The systemic responses to lack of oxygen therefore represent a balance attained between a central depression and a reflex stimulation of the vital centres, the net result within limits being a well maintained respiration and blood pressure. The reflex stimulation counterbalances the central depression, and the actual presence of the anoxic condition is not evident from observations on blood pressure, heart rate and respiration. As the anoxia becomes more marked a stage is reached when the depression of the central control becomes so severe that the centres are no longer responsive to the reflex stimulation. There may then be sudden failure of the circulatory or respiratory systems or both.

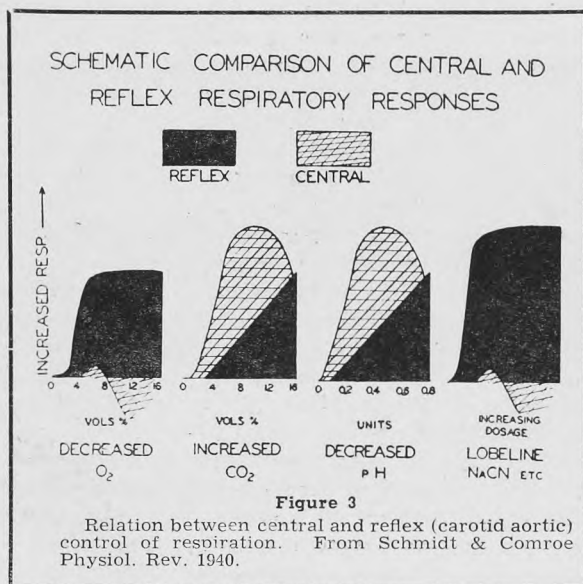
The significance of this is apparent, especially to the anaesthetist. Observing a patient it is not always possible to decide whether or not he is anoxic from the state of the blood pressure, heart rate or respiration. They may appear to be within normal limits, but they may be maintained in that apparently normal range by the emergency reflexes, which if they could be assessed, should be interpreted as an indication of a danger state.

In clinical and experimental asphyxia and anoxia these points are of considerable significance. If the anoxia is severe, reflex stimulation from the chemoreceptors, which had been maintaining the activity of the vasomotor and respiratory centres, may automatically be eliminated by the administration of oxygen, since the O₂ tension in the arterial blood will rise. The patient may thus stop breathing, because the persisting depression of the central cells is not quickly corrected by the oxygen. This result is not an argument against the use of oxygen, but it does indicate the essential need for maintaining the lung movements by some form of artificial respiration until such time as the central cells have recovered sufficiently to assume again their normal autonomous activity. This may require hours.

The chemoreceptor system is primarily an emergency mechanism which may tide the patient through a critical stage. Whether it exerts any control in normal states has been a matter of con-

troversy. The general opinion at present, however, is that in the normal, unanaesthetized condition, it plays little part in cardiovascular or respiratory control. It may be important during anaesthesia as well as in asphyxia and anoxia.

The chemoreceptors are also responsive to an increase in the CO_2 tension in the blood. But it



is probably a majority opinion at present that in this respect the central controlling centres are more sensitive than the reflexes. Many respiratory stimulant drugs also produce their effects through the carotid and aortic body reflexes. Thus the cyanides, which cause respiratory stimulation in small doses, do so through interference with oxydative processes, causing an intracellular anoxia within the chemoreceptor endings. Lobeline, sulphides, many choline-like drugs, and increased blood acidity may also stimulate the carotid aortic bodies and cause respiratory and circulatory responses.

The relationship between the reflex and central influences of these various agencies is illustrated in the diagram in Fig. 3, from the review by Schmidt and Comroe. Comprehensive reviews of the functions of the carotid aortic systems have been published by these and other authors (cf. Bibliography) ^{3, 4, 5}.

Function of Chemoreceptor Systems In Ether Anaesthesia

In the course of experiments to study the reactions of animals to various drugs following carotid aortic denervation, it was observed that serious depression of respiration and blood pressure occurred upon the administration of ether. This was an interesting contrast to the good state of these systems which is usually maintained

under ether in ordinary anaesthetic use. Seven experiments of this type were therefore performed, and the results are quoted below as a preliminary report.

Dogs were anaesthetized with a basal dose of urethane, 1 to 1.5 Gms. per kilo body weight. They were set up to obtain graphic records of blood pressure and respiratory movements. The carotid sinus nerves were carefully dissected out and made available for quick sectioning by passing a thread under them. The vagi nerves were cut in some experiments. "Control" runs were then taken, and the blood pressure and respiration recorded in this "basal" state. Ether was then given by inhalation in concentrations sufficient to produce a middle third stage anaesthesia. The ether was actually administered from a volatizing bottle through a tracheal cannula, and the concentration adjusted by means of a by-pass to the open air. Once the correct value was obtained the by-pass was fixed and any subsequent application of ether utilized the same setting of it. It is assumed that repeated ether administrations would have the same concentration, although it is recognized that there is a possibility of variation depending on the respiratory movements. No quantitative methods of ether assay or administration were available. On some occasions the ether applications were repeated as a check up to an hour or so while records were taken of the blood pressure and respiration. The ether was then removed, allowing adequate time for its dissipation. The carotid sinus nerves were cut. Time was allowed for stabilization of blood pressure and respiration and the ether was reapplied, and the effects noted.

Results. The application of ether in each instance when the sinus nerves were intact was accompanied by a well maintained blood pressure and respiration. The blood pressure usually increased, as also did the breathing, especially the respiratory rate. After section of the sinus nerves the application of ether was followed in about five minutes, sometimes less, by a progressive fall of blood pressure and decrease in respiration in 5 of the 7 dogs. (Fig. 4).

A transitory slight rise of blood pressure sometimes preceded the fall. The depression of the vital centres was so severe that resuscitative measures, such as adrenalin and artificial respiration had to be applied promptly or the animal died, and these measures had to be continued with perseverance to permit recovery, which was very slow. A repeated application of ether caused the same depression to occur, and some of the dogs died in spite of efforts to revive them. In the 2 dogs which failed to show this response, there was an exaggerated rise of blood pressure with ether following denervation, presumably indicating the

loss of the buffer pressoreceptor control, without elimination of all chemoreflex activity. The explanation probably lies in the existence in these animals of accessory sinus nerves, (which were not severed).

The marked cardiovascular and respiratory failure that occurred after carotid denervation

whether the test could therefore be used to assess and predict their effectiveness, or lack of effectiveness, in conditions of stress such as anoxia and ether anaesthesia. It might thus be possible to avoid some anaesthetic deaths by using different anaesthetics, or by being prepared to apply resuscitative measures early.

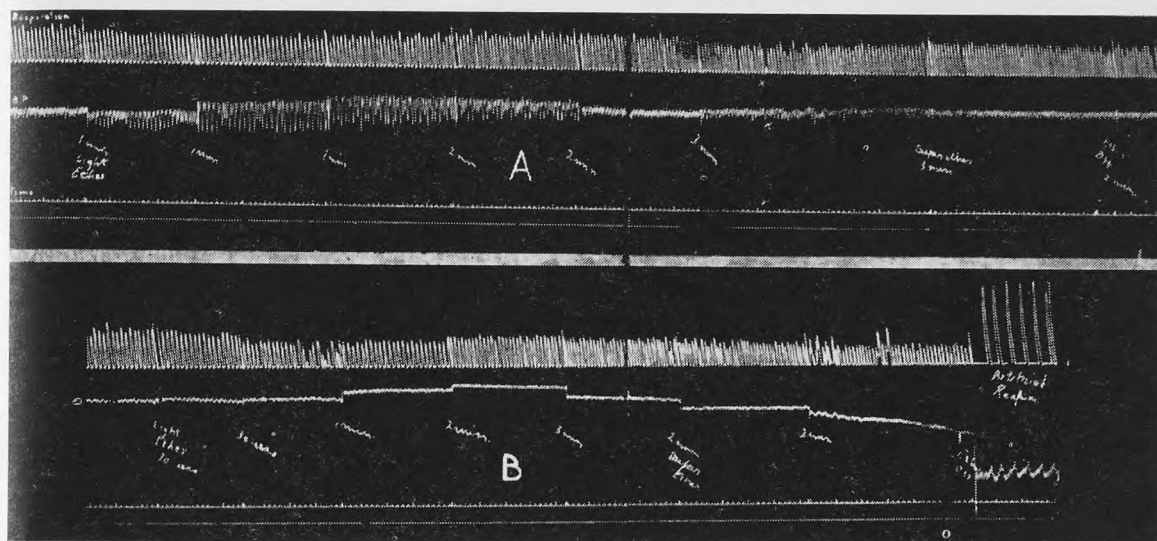


Figure 4

Dog. Basal urethane anaesthesia. Blood pressure and respiratory records.

A. Administration of ether with intact sinus nerves caused maintained increase of blood pressure and respiratory exchange.

Between A and B carotid nerves sectioned, with slight

increase of basal blood pressure and increase of heart rate. Half hour between A and B with ether off.

B. Readministration of ether caused temporary increase of blood pressure and more rapid respiration followed by rapid fall of blood pressure and respiratory failure requiring artificial respiration.

compared with the well-maintained state with ether when the carotid systems were working is interpreted to indicate that reflex drive is important in the maintenance of a good general condition of respiration and circulation during ether anaesthesia. The findings suggest an explanation for some cases of sudden death on the operating table when no other cause can be given. They are therefore of particular interest to the anaesthetist and surgeon, for it seems possible that where these emergency reflexes are inefficient they fail to rally the central controls to adequate activity under critical conditions.

The question arises as to whether it would be worth while to attempt to assess their activity pre-operatively. Lobeline, or other chemoreceptor stimulants might be considered. The intravenous injection (2) of 5 mgms. of lobeline characteristically causes a sudden sigh, or cough. It has been used for this reason to measure circulation times. It has also been noted that some patients fail to respond to the usual doses. The question might be asked whether this represents a relative insensitivity of the chemoreceptor systems, and

Summary: 1. A brief review of the physiological control of the pressoreceptor and chemoreceptor divisions of the carotid-aortic mechanisms has been presented.

2. Some clinical implications of their physiological activity were discussed.

3. A preliminary report of the effects of ether in dogs deprived of their carotid-aortic reflexes was presented. It indicates that the maintenance of a good blood pressure and respiration may depend upon reflex drive from the chemoreceptors during anaesthesia. The possible importance of this activity from an anaesthetic and surgical point of view was discussed.

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Hydatid Disease

S. S. Peikoff, M.D., F.R.C.S. (Ed.), F.R.C.S. (C.) and E. P. Angelle, M.D.

Hydatid disease on the American continent is apparently uncommon. The records of the Winnipeg General Hospital reveal that since 1923 thirty-five cases have been diagnosed and the majority were Icelanders¹. Approximately 500 cases have been reported in America since 1811 and of these all but 29 occurred in persons who more than likely contracted the disease in some foreign country where hydatid disease is prevalent².

I have been in general practice for over twenty years and this is the first case I have encountered.

Hydatid disease is common in sheep raising countries such as Iceland, New Zealand, Syria, Australia and Greece. In Syria surgical records show that one out of every 150 surgical patients has hydatid disease³.

There are two main types of *Echinococcus* disease; *Echinococcus cysticus*, the common form (and it is this disease which is reviewed and discussed here) and *Echinococcus Alveolaris* a much rarer condition.

Occurrence and Manner of Infestation (see Fig. 1):

Hydatid disease is caused by a cestode—*Echinococcus granulosus*—which normally completes its life cycle in two hosts.

(a) The definitive host is always the dog who harbors in his intestines the adult tapeworm—the taenia echinococcus.

(b) The intermediate host is usually the sheep, and less frequently the ox, pig or man; and it is here that the embryo builds for itself a nest—in the form of a cyst—usually in the liver and begins to reproduce hundreds of scolices (future worm-heads).

The dog devours a sheep infested with mature hydatid cysts, containing the scolices or embryo worm-heads. The scolex consists of only a head and six hooklets. On reaching the dog's intestine it attaches itself to the crypts of the intestinal mucosa by means of these hooklets and here develops into a mature taenia or cestode. The cestode is about 5 mm. in length and is composed of four segments: a head with two rows of hooklets; a second immature segment; a third containing reproductive organs; and a fourth, the proglottis — containing male and female sex organs and ova. The proglottis eventually ruptures freeing hundreds of ova which are passed in the faeces of the dog, contaminating pastures and water supply.

The sheep ingests these ova while grazing on the contaminated pastures. On reaching the stomach, the shell of the ovum is digested,

liberating the hexacanth or active embryo which is five times the diameter of a red blood cell. It bores through the mucous membrane of the small intestine and reaches a radical of the portal vein to settle in a liver lobule, where it develops into so called hydatid cyst. In man 50% of cysts develop in the liver. In some cases the ova pass through the capillaries of the liver, enter the general circulation and may then locate in any of the organs in the body, e.g., in the lungs in about 20%; other organs 20%. Cases are reported in which there is no involvement of the liver, the spread being entirely extrahepatic. In these cases the ova are said to spread directly to general circulation via lacteals⁴.

When the embryo settles in the liver lobule it produces an irritating toxin, which provokes a cellular reaction in the tissues. It becomes surrounded by a zone of lymphocytes, endothelial cells, and especially eosinophils, which are a specific response to the helminthic toxin. In about one month a definite cyst is formed in which can be recognized four layers.

(a) Ectocyst (outer coat—of fibrous tissue formed by the reaction of the tissues.

(b) Laminated layer—which is a rigid layer and serves as a protection to

(c) Endocysts or germinal layer which in turn produces

(d) Brood capsules and scolices.

The content of the cyst is a clear opalescent alkaline fluid which nourishes the scolices.

In about nine months the germinal layer produces little vesicles or brood capsules. These contain the scolices or future worm heads. The scolex is composed of a head and hooklets similar to the adult taenia. As a result of injury or irritation of the cyst wall, daughter cysts develop in the germinal layer. The daughter cysts contain both scolices and brood capsules, like the mother or original cyst. They may grow to a tremendous size. Barnett⁵ removed eleven gallons of hydatid fluid from a colossal hydatid cyst of the abdomen.

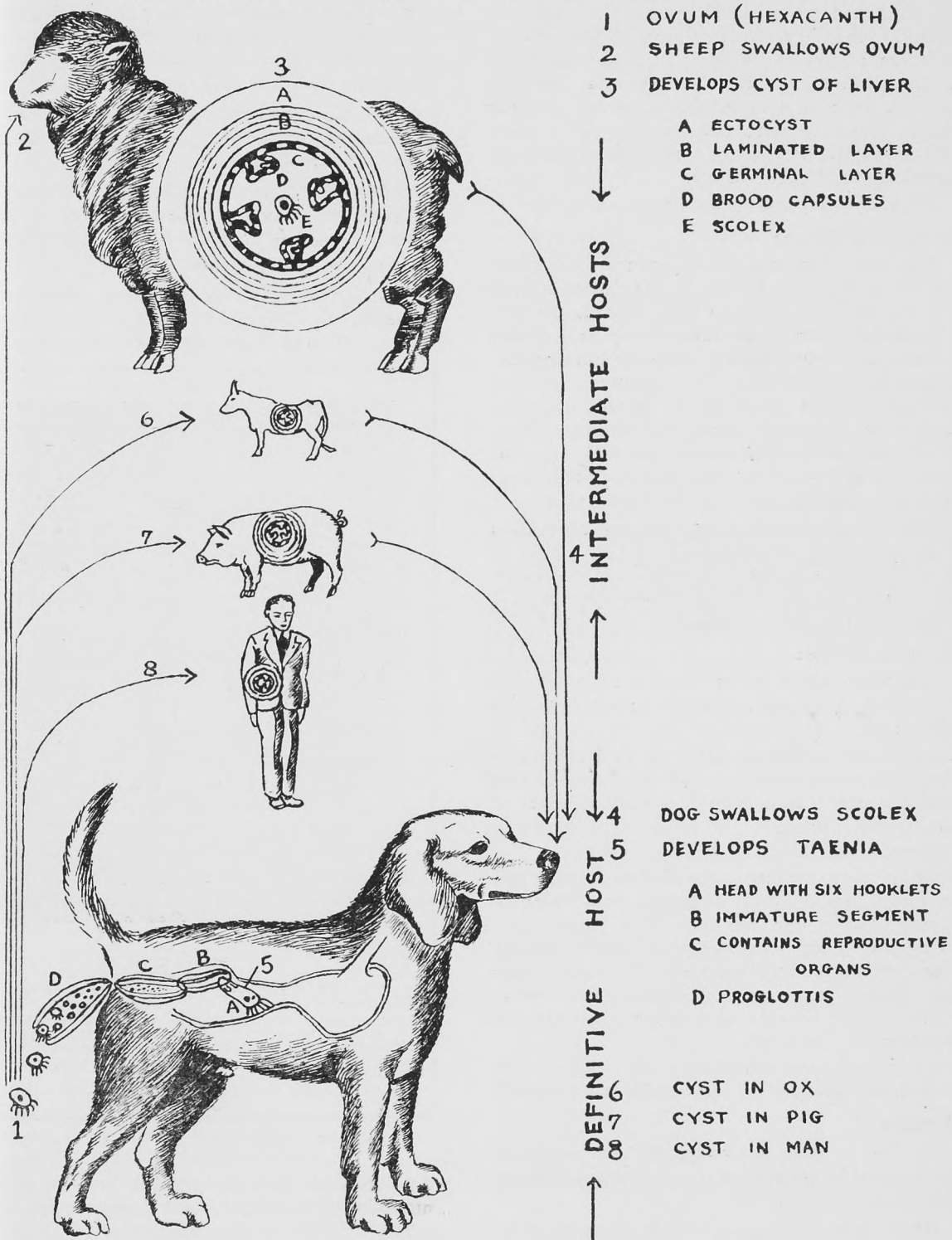
Man becomes infested with ova in canine faeces either through contaminated food, or water supply or by fondling the dog. When the man develops hydatid cysts the life cycle of the taenia ceases and ends in the operating room or at autopsy since human organs are not consumed by the dog.

In North America, hogs are more often the intermediate hosts.

Symptoms

Echinococcus disease progresses very slowly and for this reason the disease usually becomes

LIFE CYCLE OF TAENIA ECHINOCOCCUS



evident only in adult life. The parasite may remain viable for as long as forty years or may die spontaneously or as a result of rupture or infection of the cyst. If the parasite dies, the cyst wall becomes calcified and the contents pul-taceous. Since hydatid cysts grow so very slowly the surrounding tissues accommodate themselves to the gradual pressure. They remain dormant for years with no symptoms whatsoever. It may thus be found in many cases accidentally e.g., on routine examination, X-ray spot films, exploratory operations, or at post mortem.

Symptoms fall into two groups:

(A) General Effects:

These are of an anaphylactic nature. The patient usually becomes sensitized to the hydatid fluid by minor leakages from the cyst. Should the cyst be ruptured either spontaneously or as a result of infection, puncture or surgical interference, anaphylactic phenomena may be severe. It may manifest itself in the form of pruritis, urticaria, constricting feeling in chest, pulmonary oedema or a sense of precordial constriction. For this reason aspiration of the cyst for diagnostic purposes is dangerous and is to be condemned.

Sensitization results from repeated absorption of protein from hydatid fluid and this fact is utilized as a basis for two diagnostic measures; the complement fixation test (Weinberg) and the intradermal reaction of Casoni⁶.

(B) Local Effects:

This will depend on the organ involved as well as the fate of the cyst. One of three things may happen:

(a) It may cause pressure on vital structures from continuous growth; on the bile ducts, leading to obstructive jaundice; in the skull, increase of intracranial pressure; in bone, a spontaneous fracture.

(b) It may rupture into vital passages: into the lungs, producing an empyema or a broncho-pleural fistula; into the peritoneal cavity, producing peritonitis and severe anaphylactic reaction from overwhelming absorption of hydatid fluid; into biliary ducts, causing obstructive jaundice or ova may find their way into the intestines and discovered in the stool.

(c) It may suppurate from contamination with *B. Coli* and produce all the effects of an abscess.

Diagnosis:

(1) This is often extremely difficult especially in symptomless cases since the disease is consistent with good health.

(2) A history of having lived in a foreign country especially where sheep raising is prevalent is very significant.

(3) Hydatid fluid is under considerable pressure so that the cyst is usually spherical. Since the cyst is present for many years before the patient presents himself to the physician with the swelling, the walls are calcified. Roentgenologic evidence of a rounded mass with areas of calcification is the usual method of diagnosis. The only other condition of differential importance is a dermoid.

(4) Anaphylactic reaction affords three diagnostic tests; although their value has been variously appraised and denounced.

(a) Eosinophilia—is supposed to be present in majority of cases. In about 50% of cases the Eosinophile count is higher than normal, the upper limit of normal being about 6%.

(b) Intradermal test of Casoni performed by injection of .2cc of sterile hydatid cyst fluid, usually obtained from the sheep, into the skin of



Figure 2

Figure 1. Patient's arm half hour after the control injection of physiologic saline solution and the injection of 0.05 c.c. of fluid from an echinococcus cyst. The upper wheal is the site of the control injection. The larger lower wheal with pseudopods surrounded by the wide areola of inflammatory reaction indicates a markedly positive reaction.

—By courtesy of Douglas Deeds, formerly of Mayo Clinic, now in Denver, Colo.

the forearm. Test the patient first by stroking the skin with a blunt-pointed instrument and if strong evidence of dermatographia is present, he is unsuitable for the intracutaneous test⁷. See Fig. 2.

As a control for the test, inject .2cc of sterile physiologic saline an inch or so from the area of the test. The test is positive if the area develops an erythematous reaction with a wheal in the centre of the reaction. Reaction usually occurs in thirty minutes. In some cases the reaction is delayed occurring after 6-12 hours. A negative test is of value but a positive test may be due to a variety of other conditions e.g. urticaria, hay fever and asthma.

Smith and Magath state positive tests may persist for many years after the patient has been relieved of the cysts and therefore are unsuitable in detecting recurrence.

(c) The cutaneous test (Magath) is performed by making two linear scarifications, placing on one a drop of hydatid cyst fluid and on the other a drop of physiologic saline solution. A positive reaction is similar to Casoni's test with the added advantage of little or no reaction.

(d) Complement fixation test (Weinberg). The antigen for the complement fixation test must be obtained from a cyst, usually from the sheep and must be fresh unpreserved fluid. The test is similar to a Wasserman test. 85% of persons who have hydatid disease give positive reaction. The disadvantage of the test lies in the fact that reliable cyst fluid is not available in this country. Magath indicates that the antigen can be preserved with Merthiolate. He has used antigen preserved for nine months with positive reaction.

(e) Use of "Thorotrast"⁸ in suspected liver cysts, permits visualization of the Echinococcus cyst by showing a defect in the liver shadow.

"The patient is given a big carbohydrate diet and 1000 cc of 10% solution of glucose in physiologic saline intravenously daily. On three consecutive days an ampoule containing 25 cc of thorotrast is dissolved in the solutions which are given intravenously. On fourth day stereoscopic roentgenograms are taken of the upper part of the abdomen in such a way as to include the liver and spleen. Thorotrast is the proprietary name for a colloidal suspension of thorium oxide. When this substance is injected intravenously the radiopaque particles of thorium oxide undergo phagocytosis chiefly by the reticulo-endothelial cells of the body. As the liver and spleen are richly endowed with these cells, after administration of thorotrast both of the organs are much more readily visualized roentgenographically. Obviously a cyst, malignant growth, foreign body or anything which disturbs the homogeneous distribution of the reticulo-endothelial cells will result in a defect in the roentgenographic picture of these organs following the use of thorotrast." Thorotrast is a radioactive substance and must be used with

caution! Recent reports show that some cases develop sarcoma as late as 7-8 years after its use.

History:

S. W., Age 51: Canadian of Ukrainian birth, admitted July 11, 1945, with a diagnosis of Hydatid Cyst of the Liver made by the Regina Cancer Clinic.

Entrance Complaints:

1. Heartburn for 9-10 years; burning epigastric discomfort with post prandial eructations of sour gas.

2. Constipation 10-15 years.

3. Loss of five pounds in past 6 months.

4. Occasional nausea but never vomited. Has been treated for peptic ulcer for past 10 years.

5. Appetite good. No jaundice at any time.

6. Dyspnoea especially on exertion 5-6 years.

Personal Family History:

Born in Austria: Came to Canada at six years of age. Was farmer for many years then became shoemaker. Father and mother died at 84 and 85 respectively. One sister died of "kidney trouble" and one brother of cancer of the bladder.

Past History—No illness; tonsillectomy.

Physical Investigation:

A large rounded mass was readily palpable in the right upper quadrant of the abdomen. It was firm, smooth and appeared to be moving freely with respiration. One could be fairly definite that the mass projected from and was part of the liver.

Abdomen—Otherwise negative.

Head and Neck—Normal.

Eyes—React to light and accommodation.

Tongue—Moist.

Heart—Normal. B.P. 120/80; pulse 78; normal rhythm.

Limbs—No swelling, oedema, or varicosities; reflexes normal.

Special Examination

1. Blood Count; R.B.C.—5,480,000; Hgb., 111%; C.I., 1.0; W.B.C., 7,700; Polys, 56%; Monos, 5%; Lymphos, 39%; No eosinophils; W.R., negative.

2. Urinalysis 2-3 pus cells otherwise negative.

3. Fractional gastric analysis—shows moderately high free HCL.

Specimen	Free HCL	Total Acidity	Blood
Fasting	19	44	Trace
1.	28	46	0
2.	50	68	0
3.	49	64	0
4.	42	61	0

4. Stool negative for blood or ova.

5. X-ray—(1) Plain film—Large rounded partly calcified shadow in upper right abdomen which

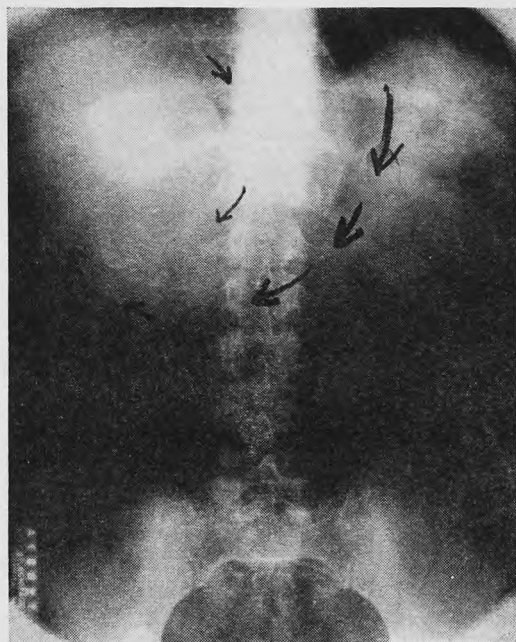


Figure 3. July 12th, 1946

Large Calcified Shadow in right upper quadrant.
Smaller central shadow suggesting Daughter Cyst.

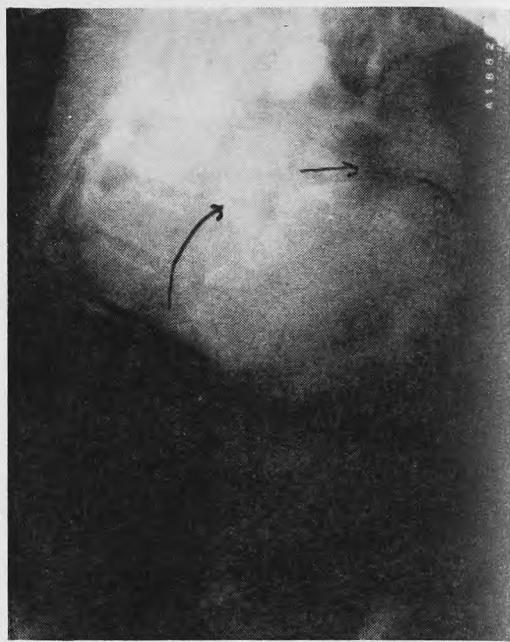


Figure 4. Lateral View

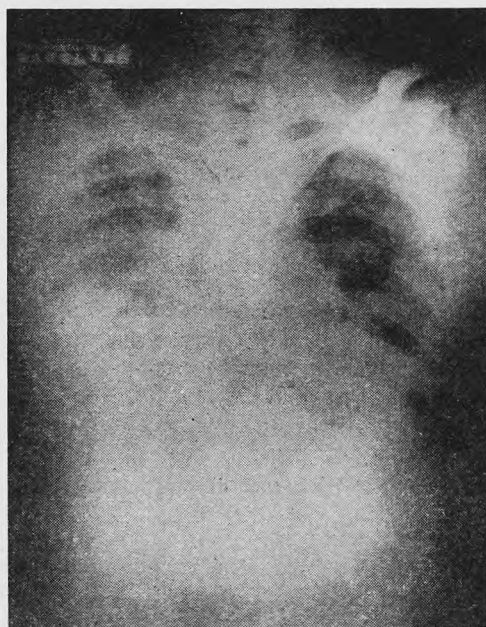


Figure 5. July 23rd, 1945



Figure 6. July 27th, 1945

suggests a calcified hydatid cyst containing a daughter cyst (Edmison). (Fig. 3 and 4).

(2) **Chest plate**—Lung fields, clear; heart and vessel shadows are normal; diaphragms are normal

(3) **Cholecystogram**—Shows a normally functioning G.B. with no evidence of calculi.

(4) **Gastro-intestinal series**—"This examination is negative for gastric ulcer or cancer and negative for active duodenal ulcer. No definite pathology is seen within the gastro-intestinal tract.

(5) **Intravenous Pyelogram**—Revealed no evidence of disease in the urinary tract.

(6) **Casoni Test**—Negative.

(7) **Complement Fixation**—Not done because antigen was not available.

(8) **Prothrombin Time**—100% normal.

(9) **Blood Proteins**—Total, 7.18; Alb., 3.37; Glob., 3.81.

Pre-operative Care:

Matched for blood transfusions.

Anaesthesia; sodium pentothal induction plus intratracheal ethylene (Dr. Marjorie Bennett).

General anaesthetic is usually chosen as it is said to prevent anaphylactic reaction during operation and delays its onset for 24-48 hours.

Operative Technique:

Operation was performed July 16, 1945.

Right paramedian incision from xiphisternum to 2 inches below umbilicus. The most difficult part of the operation was entering the abdominal cavity on account of adhesions plastering the abdominal wall to the cyst wall and liver. This is probably due to irritation from periodic leakage of the cyst contents. Once the liver was exposed, a huge mass, size of a small football, was evident in the centre of the liver and bulging anteriorly and on its inferior surface. The upper half of the cyst was firmly imbedded within the liver.

If a cyst is pedunculated as in some cases and projects freely from the lower surface of the liver or into the retroperitoneal tissues, it can be removed completely, by tying off the pedicle. Where the cyst is imbedded in a vital organ, as it was in this case, excision of the cyst is unnecessary. One takes advantage of the fact that there is an excellent line of cleavage between the ectocyst and laminated layer and thus the entire cyst can be completely enucleated.

The usual treatment in such cases is to marsupialize the cyst wall to the parietal peritoneum before opening the cyst. Since, however the cyst was so huge and its wall so thick and calcified, I felt that a portion of the cyst wall should be

removed in order to permit collapse of the cavity after the contents were emptied.

The edges of the skin wound, the stomach and intestines were carefully packed off with large pads to prevent contamination and spilling of scolices when the cyst is evacuated as implantation is said to occur very readily.

50 cc of 4% formalin was injected into the cyst cavity and left in for twenty minutes. An incision was then made directly into the cyst, and immediately there oozed a mixture of pultaceous and jelly-like material of varied colors; chalky, brown, reddish, and greenish yellow. There were myriads of little sacs ranging in size from a marble to an orange. The free projecting calcified wall on the anterior and inferior surface of the liver was completely excised. The line of cleavage between the laminated layer and the ectocyst made it easy to enucleate the entire contents. No attempt was made to remove the part of the adventitious wall adherent to the liver, as uncontrolled haemorrhage would result.

The huge cavity was irrigated with saline and swabbed with ether. Gentle pressure on the inferior surface of the liver allowed the cavity to cave in. The edges of the adventitious sac were brought to the surface and marsupialized by stitching the skin. About 8-10 yards of 2-inch gauze packing was placed in the cavity.

Post-operative Course:

The post-operative course was fairly smooth until the second day (July 19) when symptoms of severe anaphylaxis appeared. This was probably due to the spilling of some of the hydatid fluid in the process of emptying the cyst. By the sixth day (July 23) the patient had become extremely dyspnoeic and restless. A chest plate (Fig. 5) showed oedema of the right lung with some fluid at the base. A quart of turbid brownish yellow fluid was aspirated with considerable relief. By July 27, 1945, a second plate (Fig. 6) showed generalized oedema of both lungs. He was literally drowning in his own secretions.

Repeated aspirations along with the continuous supply of oxygen and ephedrine every 3 hours seemed to tide him over the crisis. On August 20, 1945, X-ray (Fig. 7) showed the lungs completely normal.

He was discharged from the hospital on September 13, 1945, in apparently good health except for a small discharging sinus in the centre of the incision.

On January 3, 1946, he returned for re-examination. The sinus was still persisting. The discharge was bile-stained and very small in amount and continually lessening. A small catheter

was introduced into the sinus and injection of Lipiodal showed this to be communicating with the biliary tree (Fig. 8). Since the discharge is minimal and non-irritating it is inconsequential and the sinus will probably close up in time.

Conclusion:

Case of hydatid cyst of the liver in man with a history of probably 30 years duration is presented. Review of the current literature along with treatment and progress is herewith recorded.

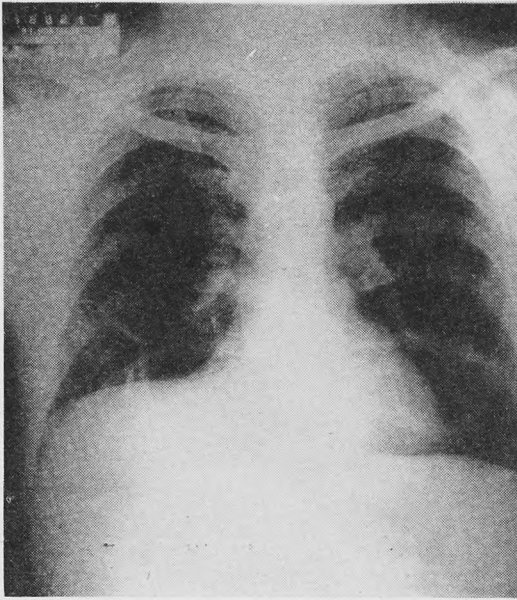


Figure 7. August 30th, 1945



Figure 8. January 31st, 1946

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Case Report

Obstetrical Difficulties

The Histories of Three Interesting Cases—W. S. Peters, Brandon

1. A Case of Repeated Still Births.

On February 8th of this year I was asked to attend a case where foetal death had been recognized. The patient was in her eighth pregnancy. The first two had resulted in normal children who were still alive at the ages of 14 and 12 respectively. The intervening five pregnancies each ended about the 7th or 8th month with the delivery of a dead foetus. The present gestation had begun in June and the expected date for confinement was in March. The abdomen, however, was no larger than that of a 6 month pregnancy. The patient went into labour on February 9th and was soon delivered of a shrivelled male child only 13 inches long and 22 ounces in weight.

On the third day her temperature rose to 103°. Her pulse rate was 120 and her respiration 30. The leucocyte count was 13,800. She was given Penicillin (20,000 units every 3 hours) and Nicosulf. In three days her condition was normal and she was discharged on the 14th day.

The history of repeated still births suggested investigation of the blood. This showed a negative W.R. and also negative Rh. These foetal deaths are evidently due to the Rh factor as there was definite evidence of mother developing some immunity as shown in examination of blood. Since then I have done routine Rh investigation on all pregnant patients and on their husbands. The results so far are: Rh positive—121, including 10 Rh positive husbands with Rh negative wives; Rh negative—18, including two couples in which both husband and wife were Rh negative. In all cases the W.R. was negative. The groups were as follows. In the Rh positives—O, 56; A, 46; B, 9; AB, 10. In the Rh negative—O, 12; A, 3; B, 3.

N.B. All our blood Rh examinations have been done by Dr. Bruce Chown of the Children's Hospital, Winnipeg, and the W.R.'s by the Provincial Health Laboratory.

2. A Case of Dystocia due to Congenital Hydronephrosis and enormous Bladder Distention in the Foetus.

The patient was a woman of 27 in the 7th month of her 2nd pregnancy. For the previous three weeks her abdomen had been steadily and quickly enlarging until it was greater than normal for a full term pregnancy. This raised the question of twins but X-ray examination showed only one foetus to be present. The doctor in attendance at the labour found the head presenting and was

able to deliver it but the body could not be extracted.

My examination revealed a large cystic mass rising above the pubes and preventing delivery. This disposed of the diagnosis of hydramnios and suggested some cystic process in the foetus. Guided by the left hand, long curved scissors were passed into the uterus and the "cyst" punctured. This was followed by the discharge of a large amount (about 2 gallons) of fluid. The delivery was then easily completed. There was moderate bleeding and Pitergyn was given immediately after expulsion of the placenta.

On the following day the breasts were swollen and painful. Estrobine and stilboestrol were administered and also sulphathiazole. Recovery was uneventful.

The following is the autopsy report on the child:

Body of newborn female infant with placenta. Body is well formed except that abdomen is enormously distended and has been incised during birth. Placenta appears normal.

Section reveals that distention is due to an enormously enlarged urinary bladder, which occupies the whole of the left side of the abdomen. Kidneys are large (the left is 7 cm. in vertical diameter), pelvis and ureters are distended with watery fluid so that their walls have the appearance and thickness of tissue paper. The ureters are tortuous and the openings into the bladder small and difficult to demonstrate. The ureters are patent. The calices of the kidneys are dilated and the kidney substance reduced to about 2 mm. of cortex.

Liver and spleen are not enlarged. (Spleen is only $\frac{1}{3}$ the size of enlarged kidney).

Heart appears normal.

Lungs are not distended.

There is slight oedema of the tissues of the anterior abdominal wall, but no general oedema.

Congenital hydronephrosis and enlargement of the urinary bladder.

Sgd. S. J. S. Pierce,

Pathologist.

A review of the literature reveals that up to 1919 Dorland had succeeded in finding only 64 reported cases. In 1929 Goldberger reported finding 217 cases of congenital dilatation of the foetal bladder but did not state in how many dystocia had occurred. The condition affects male children chiefly and occurs usually in the children of primi-

gravidæ or in the very young mothers. In some cases the fault lies in urethral obstruction but in many no structural abnormality is present. In these cases the condition is thought to be due to defective neuromuscular activity and is thus analogous to congenital pyloric stenosis and Hirschsprung's Disease. The foetal renal system is capable of functioning from about the 7th month but ordinarily there is no secretion of urine until or just before labour is in progress. In certain diseased states however active secretion may begin several weeks earlier. The presence of a greatly enlarged bladder makes labour difficult and should the foetus live it is only for a few hours. When recognized the collection of fluid must be evacuated. I wish to thank Dr. H. S. Evans for data previous to my contact with the case and also to the W. F. Prior Co. for literature on the condition.

3. A Case of Dystocia due to Stenosis of the Cervix.

A woman of 25 was referred to me because of the pelvic findings discovered by her attending doctor. He found on pelvic examination that there was no recognizable cervix in spite of the fact that there had been a previous normal delivery. The story was that following this first delivery her periods had been irregular and so her calculations were uncertain but she believed herself to be pregnant and in November attempted to procure an abortion. She did this by inserting several small fragments of copper sulphate into the cervix.

Nothing happened and some weeks later she saw her doctor who, however, did not examine her pelvis. The first pelvic examination was made during her delivery when only a smooth vaginal canal could be felt. When seen by me I also could not identify the os beyond feeling a rounded thickened area posteriorly. When examined by

speculum a whitish discharge was seen to ooze from a small spot in thickened area. Into this was passed a small Hegar dilator about the size of a probe. This entered the cervix which was found to be thinned and continuous with the vaginal vault. Larger dilators were passed and then the fingers used until the os was about the diameter of a dollar. The membranes were not ruptured and the patient was allowed to continue normally.

Early next morning delivery was completed under chloroform anesthesia. The cord was twisted around the neck and had to be cut. The child appeared to be 3 weeks premature. Breathing was slow in beginning and resuscitatory methods had to be used. Later the child suffered from nervous seizures but these were quickly and completely controlled. Both mother and child left the hospital well.

The apparent absence of the cervix raised a number of questions. First, as to immediate treatment, was Caesarean section indicated? If it were, would the lochia have to be discharged through the abdominal wound? The discovery of the tiny os and the success which followed the dilating procedure raised a further question; what had happened to the os? The answer lies, of course, in the attempt to procure abortion by the use of blue stone. This had only inflamed the mouth of the uterus and led to its great narrowing.

If the patient had been left alone there would have been a complete slough of a large part of the cervix, especially of the anterior lip. The delivery would have been most likely accompanied by great and serious bleeding. Recovery was uneventful. At the time of discharge from hospital the cervix showed a small erosion just beyond the os. This was cauterised later.

Clinical Luncheon Reports

Children's Hospital

Jaundice in an Infant

Case History M.P. No. 46-6380; age 4 months, weight 8 pounds $\frac{1}{2}$ ounce, male, born March 3, 1946, admitted July 11th, 1946.

History: About July 4th baby's breathing was noted to be difficult, somewhat faster and labored; an occasional cough was heard. On July 6th constipation was noted. During the next 5 days these symptoms persisted. The constipation was treated with mineral oil, milk of magnesia and soap suds enemata; the methods succeeded in the production of normally colored bowel movements on 3 of the 5 days. On July 7th the baby's skin and eyes were noted to be yellow, appetite declined, and vomiting occurred subsequently whenever baby

would take more than 2 ounces from the bottle. On further direct questioning the father felt that the eyes and skin might have been slightly yellowish for about two months. There was no history of Jaundice in the family or neighborhood.

The baby was in Swan River Hospital for 24 hours prior to admission here. Penicillin was administered during this period.

Baby was born prematurely at 7 months, weight 3 pounds $3\frac{1}{2}$ ounces. The weight dropped to 2 pounds 8 ounces in the first week, was up to 4 pounds at 20 days, $5\frac{3}{4}$ pounds at 50 days, and 8 pounds $\frac{1}{2}$ ounce at 130 days on admission. Appropriate evaporated milk feeding supplemented with corn syrup had provided a good Caloric intake from birth. Soon after birth this had been supplemented with one teaspoon of "Infantol" daily;

this contains 1000 I.U. of Vitamin D in 5 ccs. There had been no former illness and there was no Icterus Neonatorum according to the father.

Both the mother and father said to be in good health. The mother, age 23, had one miscarriage prior to this birth.

On admission baby was pale and fretful with normal temperature and respiratory rate. Breathing was labored, with inspiratory indrawing of the lower ribs, more marked on the left. There was a mild degree of jaundice. The finger tips and face were a somewhat muddy light brown color. The fontanelles and suture lines were widely open. The head measurement was normal for the age. There was very marked craniotabes, the skull bones seemed almost paper thin, they were so easily indented by the fingers. Costo-Chondral junctions were enlarged. The lung fields were normal to percussion and auscultation. The heart was regular in rate and rhythm and no murmurs were heard. The abdomen was tense. At later examination the liver edge was palpable 3 fingers below the rib margin in the mid clavicular line; smooth, regular, and of normal consistence. Pressure on the liver did not cause apparent discomfort. A mass palpable in the left flank to one finger below the rib margin was considered to be spleen tip. The remainder of the initial examination was normal.

Urinalysis showed bile and urobilinogen in the Urine but was otherwise normal. Blood examination: haemoglobin 51% (sahli) R.B.C.—2.7 million W.B.C. 7.9 thousand with a normal differential; R.C. fragility normal; blood Wasserman normal (the father's blood Wasserman was also negative).

X-rays showed an area of infiltration in the left upper lung field. The anterior ends of the ribs showed flaring, and fractures of several of the ribs on the left were noted. The long bones of the legs showed moderate osteoporosis, green stick fractures of both fibulae and evidence of florid rickets. The skull bones were markedly osteoporotic the suture lines were hardly distinguishable.

The course in Hospital was progressively downhill. Penicillin was administered for 9 days when signs of bronchopneumonia developed. The usual supportive measures, with extra vitamins, calcium, etc., were given throughout. A small blood transfusion was administered July 11th which brought the haemoglobin up to 61%. The Jaundice seemed to decrease clinically after the first few days. The stools were of normal color. The baby was considered seriously ill throughout and died on July 26th, a swinging temperature had been present for 9 days prior to death.

Partial bile pigment studies were made. Bile was present in the Urine throughout, increasing to July 18th and then decreasing. Urobilinogen

was present in the Urine whenever tested, varying in amount from 1/30 to 1/60 dilution (Wallace and Diamond method). Bile pigments were present in the stool. Quantitative studies were not undertaken.

At autopsy the skin and sclera were icteric. There was very marked beading of the costo-chondral junctions. The left side of the thorax was retracted. The lungs showed bluish areas of atelectasis, visible on the surface. Section showed dark, bluish red areas of consolidation scattered through both lungs. The larger branches of the bronchi contained viscid purulent mucous. The hilar lymph nodes were considered to be slightly enlarged. The liver weighed 120 grams with a smooth glistening dark green surface. The cut surface showed small yellowish grey areas approximately 1 millimeter in diameter in a dark green background. Bile ducts were patent with no evident infection. The spleen weighed 16.5 grams. The skull bones were described as being of the same consistency as wet cardboard, soft and thin. A yellowish tinge to the choroid plexus was noted. Section at the costo-chondral junction showed the cartilage to be irregular and vascular. The ribs were soft, and easily bent.

Microscopic examination of routine Hematoxylin and Eosin preparations showed the most interesting features to be the liver. Dr. B. Chown's description is quoted in full: "The parenchymal cells are of good size but take a little darker stain than usual, due at least in part, to the presence in many of the cells of brown pigment. A very few of the cells are mildly vacuolated, some are multinucleated and some contain a single giant nucleus. A few especially in areas where there is fibrosis, are highly vacuolated and contain much pigment. There is widespread, but not extreme, increase in the connective tissue. This tends to break the liver structure into masses the size of a lobule, but in addition there is a fine increase that breaks it into smaller units. In the interstitial tissue are round cells, a few polymorphs, islands of eosinophils, and a few blasts. The Kupfer cells are distended with pigment. A few canaliculi have prominent globules of pigment in them. In summary an early cirrhosis, with evidence suggesting both continuing destruction and repair."

The Bone section showed typical severe rickets. There was some hypertrophy of adrenal, epididymis, and prostate noted. The para thyroids were also hypertrophied. Atrophy of the thymus was present.

Final Diagnosis

1. Cirrhosis of liver, jaundice.
2. Rickets.
3. Atelectasis and tracheo-bronchitis.

Autopsy was performed 36 hours after death by Dr. Jan Hoogstraten. The Microscopic sections were examined by Dr. Bruce Chown.

Comment

Bile pigment studies on infants with liver disease have not yet been recorded in any series. The normal values for children of this age have not been established. With the pathological changes here one would have expected a greater amount of urobilinogen in the urine according to adult standards. It is to be hoped that further studies of the urobilinogen will be undertaken, whenever infants with jaundice come for treatment.

Premature infants have a great tendency to develop anemia. This must be watched for in every premature, keeping in mind the normal values for red cells and haemoglobin in the first year of life.

In premature infants there is an increased susceptibility to rickets which may develop despite the usual dosage of Vitamin D. This is a well established fact.

In this case the severe rickets and the anemia are undoubtedly related to the prematurity. One wonders whether there is any relation between the prolonged jaundice and the rickets.

Victoria Hospital

Cystadenoma of the Ovary

Dr. W. F. Tisdale

In March, 1945, a woman of 55 sought advice regarding a hugely distended abdomen. Diagnosis was made of ovarian cyst with ascites and operation was advised. When this was performed two large cysts were found, one of which so filled the pelvis that removal was difficult. The appearance suggested malignancy and the smaller cyst was not removed. The pathological report was adenocarcinoma. The patient was discharged relieved and was referred for X-ray treatment.

In October of this year she was admitted to Victoria Hospital for removal of the cyst left at the first operation. She had required paracentesis about every three months following the first operation. At times the fluid removed was clear; at other times it was chocolate-colored and once it had been very bloody. At operation the tumor was seen to be very large (it weighed 13 pounds) and bound by many adhesions so that its removal

was even more difficult than at the previous operation. During the operation it was necessary to cut a fibrous band about the thickness of a little finger. This proved to be the left ureter. Repair was accomplished by approximating the cut ends and passing a catheter between the bladder and renal pelvis.

Dr. Lederman showed the gross specimen and also the microscopic appearance of sections. He pointed out that this was a tumor of low-grade malignancy but very prone to spread to the genital viscera and to the peritoneum. He regarded it as a typical ovarian cystadenoma. This tumor is characterised by the presence of papillomatous growths which may be so numerous within the cyst as to make it semi-solid. These papillomata may be present on the surface of the cyst either from the beginning or from extension from within. In this case ascites invariably occurs, secondary growths appear on the peritoneum and adhesions form. The condition is usually bilateral. Malignancy cannot always be recognized from the macroscopic examination but when peritoneal nodules are present and there is much ascites the prognosis is almost always bad although rare cases are on record in which recovery has occurred on removal of the tumor. Usually, survival is limited to twelve or eighteen months. The younger the patient the worse the outlook. When the condition is recognized operation should include the removal of the uterus and its adnexa. Dr. Wiseman discussed the management of the cut ureter.

Interesting Radiological Cases

Dr. H. Morrison

Dr. Morrison showed a number of unusual films. These included the demonstration of oesophageal varices by an easily applied technique. He suggested that this should form a part of the routine examination of every patient who had vomited blood. Another film showed an apical infiltrated area. A few days after it had been taken the patient coughed up a large amount of pus and the second film revealed a cavity. In a third case there seemed to be retention of barium in the stomach. It was found that when the patient tried to expel an enema the barium was forced through a fistula into the duodenum from the ascending colon which was the site of adenocarcinoma.



Section of Anaesthesiology

President, P. C. Lund

Secretary, D. Revell

Next Meeting Dec. 3rd

The next meeting of the Winnipeg Anesthetists' Society will be held Tuesday, December 3rd, at 8 p.m.

Programme

1. Evaluation of risk in the surgical patient and the diagnosis and therapy of post-operative chest complications . . .

By J. D. Adamson, M.D.

2. Round Table discussion—The Choice of Anesthesia in Upper Abdominal Surgery.

3. Business Session.

At the first Fall Dinner Meeting of the Winnipeg Anesthetists' Society Dr. S. Israels presented an interesting and instructive paper entitled, "Plasma Proteins in Health and Disease."

The officers elected for the ensuing season were:

President	Dr. P. C. Lund
Secretary	Dr. D. Revell

Abstract

Anesthetic complications and their management. Anesthesiology 7:69-79 (January) 1946. Mousel, L.H. et al.

The authors point out that "Anesthetic complications are essentially deviations from normal physiology. The extent of such deviation determines whether it results in a transient, abnormal state during anesthesia or in death on the operating table. The duration of upset physiology determines whether it leads to a postoperative complication or delayed death. Adequate quantities of oxygen may fail to reach the blood under four conditions common in anesthetic practice. (1) The respired atmosphere may contain inadequate amounts of oxygen due either to the failure to eliminate nitrogen from the gas anesthesia system or to the use of too high a concentration of anesthetic gas. (2) Pulmonary ventilation may be deficient because of obstruction in the airway. Relaxation of the soft tissue in the throat is the commonest cause of such obstruction but other serious causes are vomiting and laryngospasm. (3) Pulmonary ventilation may be deficient as a result of central

depression of respiration, caused most frequently by overdosage of anesthetic agent. (4) There may be interference with the function of the alveolar membrane as from edema which is commonly present in some degree, when there is anoxic increase in capillary permeability, obstruction to inspiration, or irritating fluctuations in ether concentration.

"Adequate quantities of oxygen cannot be held in anemic blood even if none of the preceding conditions exist. Beyond this, however, normal quantities of sufficiently oxygenated blood may fail to circulate adequately as in shock, and stagnant anoxia will exist. Also, histoxic influences may prevent tissue oxygenation when everything else is normal. Finally, oxygen demand may be in excess of average requirements and routine handling will lead to a deficit. Anesthetic convulsions are the best clinical examples of this mechanism. Although they may not be initiated by anoxia alone, their great danger is due to it.

Complete cerebral anoxia for ten seconds produces unconsciousness; twenty to thirty seconds causes cessation of electroencephalographic brain waves; three to five minutes produces irreversible pathologic change in the cerebrum. The myocardium tolerates anoxemia only so long as the coronary arteries can dilate enough for their extra circulation to compensate for it. In coronary insufficiency relatively mild degree of anoxemia may cause heart failure.

"Anoxia is the most dangerous depressant to the respiratory centre and therefore tends to perpetuate and advance itself. In shock, capillary permeability may be increased by anoxia to three or four times normal. This factor may produce an irreversible condition. It should be stressed that anoxia is commonly attended by excesses of carbon dioxide which add to the damage caused. The anesthetist, then, who gives his patient less than 20 per cent oxygen, allows him to be hypoventilated because of a poor airway or central depression, fails to compensate for a damaged alveolar membrane or anemia, or allows shock to develop for any reason, is already dealing with a complication. The pulmonary complications which are directly related to anesthesia are primarily atelectatic in origin. Because of a distant or indirect relationship to anesthesia, pulmonary infarction should be borne in mind as a postoperative complication.

"The early complications of circulation are shock-like in character and the originating effects of anesthesia and surgery can rarely be separated.

More persistent defects may be related to anoxic damage to a previously diseased heart. Even minor degrees of anoxia during anesthesia may aggravate liver damage, especially with certain agents such as vinethene or avertin. On the same basis, diabetic acidosis may be promoted. The susceptibility of the cerebrum to anoxia accounts for the cases of temporary confusion and amnesia, more permanent ones of dementia even to the level of idiocy, and the acute hyperpyrexia progress to a cerebral death in twenty-four hours after a period of anoxia.

The authors, after studying 47 deaths under anesthesia in the Washington area, nearly all of them in the last two years in ten local institutions, found that the incidence varied from 1 in 300 cases to 1 in 8,000. In the group under discussion, 5 deaths were largely surgical and anesthesia played no significant part. Two were from air embolism, 2 from pulmonary embolism, and 1 was an inoperable fourth ventricle tumor. Three of the deaths were considered nonpreventable although anesthesia played some part. Of these, 1 was from hemorrhage and shock after four hours of resecting a rectum, 1 was a moribund patient who had a thoractomy, and 1 was from hemorrhage and shock after four hours of surgery for a cerebellar tumor. In the other 39 cases death was considered to be preventable at least at the time it occurred, although 11 patients probably would have survived only a short time.

"There were 9 children in the series. Of these, 4 had elective operations for hernia under ether, with death thirty to ninety minutes after beginning the operation; 1 death was from aspiration of vomitus during appendectomy; 1 from anesthetic shock during open reduction of a leg; 1 after ninety minutes of surgery in the fourth ventricle; and 2 deaths occurred during ethyl chloride induction before beginning surgery. Eight adults in the series had laparotomy, including 1 cholecystectomy under ether and 1 under spinal; 1 pelvic laparotomy under gas ether and 1 under spinal; 1 stab wound of the abdomen under pentothal oxygen; 1 eight-day-old perforated ulcer under spinal, and 1 case of appendectomy was performed under gas-ether and the patient died following convulsions. Five obstetrical cases were in the series. Three patients under ether and 1 patient under ethylene died following aspiration of vomitus. The fifth, under gas-ether, died following convulsions. Of 5 patients who died following minor procedures, 1 was for incision and drainage under pentothal and 1 under ethylene-oxygen, 1 for anal dilatation under pentothal and another under pentothal for posterior colpotomy. The fifth patient had tonsillectomy under ether. There were 4 cases of intestinal obstruction of which 3 patients received 20 mg. of pontocaine

for spinal and 1 was given ethylene-ether. There were 2 thoractomies under pentothal.

"Among the miscellaneous cases were a strangulated inguinal hernia in which ether was given to a 64-year-old man, open reduction of a forearm under ethylene-ether, nephrolithotomy under ethylene-ether, and ligation of carotid under avertin-pentothal. The following examples of faulty anesthetic selection were noted: Pentothal-oxygen for closure after evisceration in a husky male, pentothal for stab wounds of neck and abdomen, avertin and pentothal for ligation of carotid artery in a 76-year-old male with carcinoma of the antrum, ether for strangulated inguinal hernia in a 64-year-old male, spinal for laparotomy in a patient with peritonitis of nine days' duration after perforated peptic ulcer, spinal for pelvic laparotomy in an obese, hypertensive, dyspneic female. Among deficiencies of conduction, the failure to maintain an open airway with adequate oxygen was apparent in 20 cases. In 11 cases replacement therapy was inadequate to combat shock and hemorrhage. In 8 cases there was failure to guard properly against the aspiration of stomach content. In the two cases of convulsion there was the failure to lower oxygen requirement to the point where it could be met, and to reduce muscular spasm to permit ventilation by the intravenous use of barbiturates. The most glaring deficiencies were in resuscitation. In 18 cases various drugs were injected directly into the heart, while some form of injection was used as a primary measure in 29 cases. Oxygen inflations were used early in only 10 cases, but in 12 cases manual artificial respiration was used.

Thus, in 33 of these cases faulty resuscitative measures were used.

"We definitely concur with Ruth, in his excellent discussion of anesthetic study commissions, that inadequate resuscitation was the most frequent failure and that the next most common error was the tolerance of the anesthetist to anoxia in his patient. Acute emergencies arising on the operating table must be met by proper resuscitative measures, that is, resuscitation with oxygen. Carbon dioxide has no place in the treatment of asphyxia. Resuscitation with adequate pulmonary ventilation may be accomplished by means of positive pressure inflation with oxygen, using the available anesthesia apparatus. The patency of the airway must be assured and sufficient pressure should be exerted on the anesthesia bag to inflate the patient's lungs. Usually the introduction of an endotracheal tube is not necessary. It is the custom of many anesthetists to delay inflation of the patient's lung until an endotracheal airway has been passed. The time consumed in this maneuver might well be sufficient to cause the patient's death. Most patients' lungs can be in-

flated if a pharyngeal airway is properly placed and the jaw is supported in a forward position. Positive pressure of 10 mm. of mercury on the anesthetic bag is usually not sufficient to produce satisfactory inflation of the lungs. Pressures of 20 mm. of mercury are almost always required to inflate the lungs of an adult."

P. C. L.

Abstract

Principles of Intravenous Anesthesia with Pentothal Sodium. Adams, R.C. S. Clin. North America. (August) 1945, pp. 788-791.

The author points out that many of the questions which are asked relative to the use of pentothal sodium anesthesia reflect the fact that the broad principles of its use are still not thoroughly understood. Intravenous anesthesia is linked closely to both the principles and practices which govern the administration of anesthetic agents in general. Most of the difficulties and fatalities associated with intravenous anesthesia have risen from failure to appreciate this fact. In the first place, pentothal sodium is a barbiturate. Although it has the desirable characteristic of being ultrashort acting, due to its rapid destruction in the body, nevertheless it exhibits many of the characteristics common to derivatives of barbituric acid in general. Induction of anesthesia should be slow. It is almost impossible to estimate beforehand how much of the barbiturate will be required to produce the optimal level of anesthesia for a particular patient. Consequently there is only one way to do this; that is—by small, slowly administered doses.

"The total dose of pentothal must be kept within reasonable limits if the advantage of its shortacting qualities is to be obtained. If these standards are not maintained, trouble is likely to ensue. Perhaps one of the most important observations in connection with pentothal anesthesia is that a patient's tolerance to the drug is lowered by traumatic and surgical shock, debility, toxemia and limiting conditions. It often has

been said that one of the advantages of intravenous anesthesia was that little or no equipment was necessary for its successful administration. Such statements are not only misleading but have resulted in many unfortunate experiences in the hands of those who believed them. The idea that general anesthesia produced by the intravenous administration of the anesthetic agent is fundamentally different from general anesthesia induced by inhalation or that it carries with it less possibility of untoward side effects is incorrect. This fact must be both understood and acknowledged by those who wish to employ intravenous anesthesia successfully. All of the difficulties associated with inhalation anesthesia are possible under intravenous anesthesia. These complications have to do chiefly with the airway, respiratory exchange and oxygenation of the patient. They need not be any more serious under intravenous anesthesia than under inhalation anesthesia provided the equipment for taking care of such difficulties is available. The use of oxygen or oxygen and nitrous oxide has now become almost routine procedure from the beginning to the end of intravenous anesthesia. Flexibility also has been increased by using local, regional or spinal anesthesia as a supplement or complement to the intravenous method.

"Intravenous anesthesia is not as suitable for certain operations as for others. In general the most unsuitable are extensive, intra-abdominal, intrathoracic and intracranial operations, operations about the nasal, pharyngeal and laryngeal passages and operations in which the position of the patient or the nature of the lesion predisposes the respiratory obstruction. However, the use of special methods, such as endotracheal intubation or supplemental regional anesthesia, may make intravenous anesthesia feasible and perhaps even desirable in some of these more extensive surgical interventions. The advantage of pentothal sodium anesthesia are many. It should be used in such a way that its desirable features are always paramount.

P. C. L.



Protection of Nurses from Tuberculosis

A. L. Paine, M.D.

Medical Superintendent, Manitoba Sanatorium, Ninette, Man.

The protection of nurses from tuberculosis is a most urgent problem at the present time. Protection may be best accomplished by (1) the use of B.C.G. vaccine, (2) more thorough training in tuberculosis nursing by the establishment of affiliate courses in Sanatoria. At Ninette we hope to have such a course functioning by the first of the year. We already have an instructress and have set up a course of lectures along with ward supervision and training. We hope to have one to three third year students from each of the smaller general hospitals for a six to eight weeks period of training. This would make a group of eight to twelve girls for each class and classes would be held throughout the year.

We believe that the student nurse in a general hospital would benefit by a period of training in a Sanatorium. We also believe that whether or not she receives this training she is urgently in need of protection from tuberculosis. Let me illustrate this point statistically: Fifteen or twenty years ago approximately 70% of nurses entering training had positive tuberculin reactions which gave them a considerable degree of acquired immunity to tuberculosis. At present only 10% to 20% of these probationers are positive to tuberculin. Dr. Scott at the Central Tuberculosis Clinic made a study of all nurses entering training at the Winnipeg General Hospital from 1934 to 1943 and found that 29 out of the total group of 774 developed tuberculosis, an incidence of 3.75%. All of these 29 had negative tuberculin on entering training.

Dr. Ferguson, of Saskatchewan, in a large series covering most of the hospitals in that Province, has also found that 3.8% of all Saskatchewan nurses entering training with negative tuberculin break down with tuberculosis, whereas only 1.08% of positive reactors break down. For some years now vaccination against tuberculosis by B.C.G. has been practiced in most general hospitals in Saskatchewan. This vaccination has reduced breakdowns in negative reactors from 3.8% to 0.89%, or, in other words, has rendered them as resistant to tuberculosis as nurses with a naturally acquired positive tuberculin. In addition, an affiliate course in tuberculosis nursing at Fort San has been in operation for over two years with almost all hospitals in the Province participating.

As yet, there is no absolute protection against tuberculosis, the best one can expect from vaccination is protection equal to that of a positive tuberculin. It is natural to ask: Is it not more dangerous for a nurse to work in a sanatorium than a general

hospital? We believe the reverse is true. At Ninette, breakdowns from tuberculosis amongst graduate nurses in the last eight years have been 1% as opposed to 3.75% amongst trainees in the Winnipeg General Hospital, as stated above. The trainee works harder, plays harder, and usually has a negative tuberculin. She is exposed to unsuspected sources of infection—some one who is being treated for another disease but has a chronic cough due to undiagnosed tuberculosis. Neither she nor the patient have been taught how to prevent infection with tuberculosis and too often she develops tuberculosis. On the other hand, the nurse coming to a Sanatorium to work, either has a positive tuberculin or is given B.C.G. and both she and the patients are constantly taking precautions against infection.

Nursing at best is a hazardous occupation as regards tuberculosis and will continue so to be for some time to come. Let me emphasize again that I am speaking of general nursing and not tuberculosis nursing. Our mass surveys have shown that about one person in every 1,000 of the general public has active tuberculosis, as compared to the above figures of one to three nurses in every 100. The most logical step in protecting our nurses would seem to be vaccination and giving them a thorough training in tuberculosis nursing by an affiliate course in a Sanatorium. We hope, with the co-operation of the medical profession to have this project under way in the near future. The attitude of the public, and along with it of the medical and nursing professions, has undergone a gradual change in the last twenty years. At first there was a fatalism amounting almost to indifference to the dangers of infection. This no doubt sprang from the great prevalence of the disease and an ingrained feeling that if you were going to get it you would get it. Later, active anti-tuberculosis work resulted in less tuberculosis, less infection, fewer people with positive tuberculin and resistance to the disease, and more knowledge amongst the public of the disease, its early symptoms and the dangers of catching it. Now we have a public suffering from tuberculophobia and this includes our nurses. The medical profession, and not least the tuberculosis specialist, has helped to bring about this state of mind. The medical profession at present is not helping us to combat this condition among nurses. It seems to me that the average medical practitioner has a feeling that tuberculosis is almost licked and the less a nurse has to do with what is left the better. This might be true if the nurse could keep away from tuberculosis in her general practice, but it should

be apparent from what has been said above that this is not possible.

As long as a nurse is going to be running into unsuspected tuberculosis she needs all possible protection, and that means vaccination and a thorough knowledge of tuberculosis and how to nurse patients who are coughing and potential spreaders of infection.

The following are a few facts about B.C.G.:

1. B.C.G., or *Bacillus Calmette Guerin*, was first produced and used in 1922 and is a special attenuated, non-virulent culture of bovine bacilli. When injected into either animal or man it has been conclusively proven to be non-pathogenic. It will, however, produce an allergic state and therefore a positive tuberculin reaction, and along with this a considerable degree of immunity to infection.

2. The facts of the now familiar Lubeck disaster which retarded the use of B.C.G. for some time are these: In 1930 some 270 infants were vaccinated with a vaccine supposedly B.C.G. Seventy-seven died of tuberculosis. It was conclusively proved by government investigation that the vaccine used was not B.C.G. but a virulent culture of human bacilli which was kept in the same incubator and used by mistake. This disaster set back the use of B.C.G. by many years.

In further support of the non-virulence of B.C.G. Dr. K. Neville Irvine, who made a two-year personal investigation of the major B.C.G. clinics in Europe and the U.S.A. in 1934, summarized the situation:

"If we review the whole chapter on the return of the virulence in man, we see a great tragedy in Germany due to a contaminated vaccine, a suspicious but inadequately investigated minor disaster in Hungary, a doubtful incident in Chile, and several suggestive but quite unproved individual cases. When we consider that 1,343,000 (now over three million) have been given the vaccine and there is not yet one sure case of death from B.C.G. infection, we would indeed be cautious if we still doubted the safety of the vaccine for the normal infant. Even if every case mentioned had been proved to be due to the B.C.G., the ratio to the total number inoculated would have been just under one in 15,000. It must be admitted that sufficient work has been done (1934) to prove that B.C.G. vaccine is harmless for the normal infant."

3. B.C.G. has been extensively used in Europe, South America and, to some extent, in U.S.A. and Canada. Disregarding most of the studies from Europe and South America, which are all optimistic but not always undertaken with adequate control groups for comparison, the following reports may be considered reliable:

(a) In Norway, B.C.G. has been used extensively in medical students, nurses and others with unusual exposure to tuberculosis. In one group of 400 medical students, all with negative tuberculin, and half of them used as controls, the incidence of tuberculosis disease in the non-vaccinated group was 4.6% as against 0.6% in those vaccinated.

(b) In some parts of Sweden all children reaching school age with negative tuberculin are given B.C.G.

(c) In England, according to an editorial in the September, 1946, *Tubercle* Tuberculosis organizations there are voicing a unanimous opinion that there is an obligation to use B.C.G. in tuberculin negative nurses.

(d) In U.S.A. Rosenthal in 1945 reports a series of 2,500 tuberculin negative infants, half of whom were given B.C.G. In those vaccinated 3 developed tuberculosis with one death. In the controls 23 developed tuberculosis, with 4 deaths. Again in the U.S.A., working with a series of 2,000 American Indians with negative tuberculin, Townsend in 1946 reports four deaths from tuberculosis amongst the vaccinated group as against 28 deaths in the control group.

(e) Ferguson from Saskatchewan, in a series, not yet published, of some thousand tuberculin negative nurses, has found, as before stated, that B.C.G. reduces breakdowns from tuberculosis from 3.8% in those not vaccinated to 0.89% in the B.C.G. group.

(f) Dr. Coppinger, Superintendent of the Winnipeg General Hospital, writing in the *Canadian Hospital* in January, 1945, states: "In our efforts to protect our student nurses we have educated them to be afraid of tuberculosis." Referring to Dr. Scott's study of general hospital nurses mentioned above, he points out that the 3.75% that developed tuberculosis had received their infection on the wards of the General Hospital and not by affiliating with a sanatorium. This is so because the ruling of the General Hospital was that negative reactors should not do tuberculosis nursing in Sanatoria. He states further: "The removal of prejudice against B.C.G. from the minds of our doctors and the gaining of their support will be a necessary first step to the introduction of immunization against tuberculosis by vaccination with B.C.G."

(g) At Ninette we have been vaccinating all tuberculin negative employees with B.C.G. for the past two years. As yet our series is not large enough for analysis. The method of Rosenthal similar to the modern small-pox vaccination technique is being used. It gives no local complications as opposed to the older subcutaneous method that sometimes lead to abscess formation.

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Editorial

J. C. Hossack, M.D., C.M. (Man.), Editor

The Pre-Marital Wasserman Test

Letters have been appearing in the newspapers complaining of the fees charged for the compulsory pre-marital blood tests. There seems to be no agreement on the part of the doctors as to what the charge should be. Some charge \$5.00. Others examine each applicant and charge \$5.00 for both examination and Wassermann Test, a practice which is wise as to procedure and proper as to charge for all persons unknown to the examiner. Still others charge \$3.00 for collecting the blood from one contracting party and \$5.00 for collecting it from both parties. That also seems fair. I understand that the Provincial Laboratory will collect the blood for \$2.00. Such a wide variation of fee is unsatisfactory. According to the recently published Schedule of Fees of the Association \$5.00 is allowed for a complete examination including a history. No examination is complete without a Wassermann Test. It is not reasonable in us or fair to the patient to charge all the fee for a part of the investigation; a part, moreover,

that takes very little time and costs us nothing now that the tubes are free. It must not be forgotten that the test is compulsory, that candidates for marriage are compelled to come to us. Any unfairness on our part will add fuel to the fire of suspicion which, lambent or flaming, burns in too many bosoms when our motives are considered.

Until the Association sets a fee everyone must be guided by what he thinks proper; but, inasmuch as the Government insists upon the test, the Government should also make provision for its free performance. Notices should be displayed where marriage licenses are sold directing candidates to where they can get the test for nothing and setting forth, also, the fee set by the Association when the blood is collected by private doctors. Such a procedure would, I believe, be fair to the people, to the profession and to the individual doctors.

Committee on Economics

The Manitoba Medical Association has had a very busy year and with all the new negotiations that are in progress with Government authorities we are in for much more work. Service by members of your Executive has been very great and it is difficult to get all the work done that is necessary on a voluntary basis.

The Committee on Economics has two evening meetings a month and the detail of preparation, correlation and execution of decisions and preparation of drafts of decisions for the Executive of our Manitoba Division and the Canadian Medical Association requires much more time, if it is to be done, than any medical member can afford to give. At the present time we are in the midst of negotiations with the Workmen's Compensation Board; we are negotiating about the classification of medical doctors employed by the Provincial Government, and we are working on a report to the Canadian Medical Association Economic Committee on three subjects, viz:

1. Principles that should underlie a prepayment medical scheme.
2. Contracts of medical doctors with any hiring authority.
3. Further studies of fee schedules for Department of Veterans Affairs and Workmen's Compensation Board.

I, personally, am very grateful to the Association in securing a full-time Secretary in the person of Dr. Macfarland to help me and my committee in this tremendous task which is before us. Now with his assistance things will move ahead with a faster pace because there will be someone whose work it is to keep things in order and moving.

Other chairmen of the various committees of our Association will likewise find the presence of our Secretary stimulating and a moving force, which will increase the efficiency and benefit of our Association to our members.

Space for our office staff has had to be increased and we will require additional secretarial assistance—in other words, the Manitoba Medical Association is now a big business and not only a social society. It is there to guard the interests of the members of our Association—not in a haphazard manner—but in a planned, organized and regular way.

Now to the point of these remarks. This increased activity and efficiency costs money and I would like the members of our Association to feel that they are getting value for every cent they have or will contribute. The fees for membership for the New Year—1947—have been raised by vote at the last meeting of the Manitoba

Medical Association and we hope that every member will shoulder his or her share of the burden. The new Annual Membership Fee is Thirty-five Dollars (\$35.00) except for the first three years of practice or where it cannot be deducted as an expense of doing business for Income Tax purposes—when it will be Fifteen

Dollars (\$15.00). The raise on the surface appears large but the true value you will receive in service and protection of your interests will far exceed this amount. Do not let us down and we hope that everyone will not delay in remitting the increased dues in the coming year.

A. Hollenberg, Chairman.

Brandon and District Medical Association

The regular meeting was held on Wednesday, November 6th, at the Nurses' Home of the Brandon Mental Hospital.

Dinner was served at 6.30 p.m. and was attended by thirty-five doctors and their wives.

Dr. S. J. S. Pierce, of Brandon, entertained the guests with a very humorous after dinner talk on "Hobbies." It is hoped this will later be published in the Review.

Dr. C. H. A. Walton, of Winnipeg, read a paper on Hypertension.

Dr. C. B. Stewart, of Winnipeg, spoke on Prostatic Infections and Enlargement, including Acute Retention.

Dr. W. H. Thorleifson, Brandon, discussed the Radiological Diagnosis of Arthritis.

Dr. M. T. Macfarland, recently appointed Executive Secretary of the Manitoba Medical Association, paid us a visit and spoke briefly.

Dr. A. L. Paine, Ninette, spoke briefly on B.C.G. Vaccinations.

E. J. Skafel,

Hon. Secretary-Treasurer.

Winnipeg Medical Society

About 150 members of the medical and nursing profession attended a meeting of the Winnipeg Medical Society, which was held in the Medical College on the evening of Friday, 15th November, when Dr. R. G. Ferguson, who came at the invitation of the Manitoba Sanatorium Board, spoke on B.C.G. Vaccinations in Hospitals and Sanatoria of Saskatchewan. It is anticipated that Dr. Ferguson's

paper will be published shortly in the C.M.A. Journal.

Dr. Frank Mathewson presented a paper on Semi-direct Electrograms to demonstrate Auricular Activity, which was appropriately illustrated.

Dr. Roy Martin appeared in the dual role of President of the Manitoba Medical Association and bridegroom-elect, and was welcomed by the Society.

Dr. M. T. Macfarland, Secretary of the Manitoba Medical Association, was introduced to the meeting and replied briefly.

Dr. H. M. Speechly reminded the meeting of the potential benefit accruing from membership in the Canadian Medical Protective Association.

Dr. Dan Nicholson presented a carefully prepared statement concerning the Medical Library and the meeting authorized a contribution of \$500.00 from the funds of the Society for this purpose.

A resolution was approved re the administration of B.C.G. to nurses in hospitals of Greater Winnipeg.

Next Meeting: Friday, Dec. 20th

The next meeting of the Winnipeg Medical Society will be held on Friday evening, 20th December, 1946, when a Symposium on Paraplegia will be conducted by Doctors Oliver Waugh, D. Swartz, P. T. Green and E. W. Pickard. A symposium was held recently at the International Congress of Medicine, Cleveland, Ohio. A movie film will be presented.

For the second paper, a surprise is in store—details have not yet been divulged!

Association Page

It is indeed a pleasure to acknowledge the kind introduction which Dr. Hossack gave me in the Editorial Column of the November issue, and the generous reception which is being accorded me as I meet the various groups and individuals. With your forbearance I hope that I may gradually acquire the facility of associating names and faces. You may assist by making yourself known, or by casual visits at the Association office.



During the month of October, 1946, your Secretary had an opportunity to visit the new offices of the Canadian Medical Association, which are located at 135 St. Clair Avenue West, Toronto. The General Secretary, Dr. T. C. Routley, had just arrived by air from England, where he had attended the inauguration of the World Medical Association, and generously placed the varied resources of his office staff at my disposal. I was given access to the files and provided with an office in which to work. Dr. A. D. Kelly, Assistant Secretary, was still touring the Maritimes attending the Divisional meetings, but returned in time to give valuable advice.

Dr. H. S. Dunham, Assistant Secretary of the Ontario Division, was most helpful in supplying the answers to my many questions. With Dr. Dunham I attended annual meetings of Districts 2 and 3, where matters which are of importance to the medical profession as a whole were discussed. The agenda in each case carried such items as—Medical Care of Veterans, Prepaid Medical Care, Medical Welfare, Control of Tuberculosis, C.P. and S.—Report of Council Representative, Membership, Post Graduate Medical Education, Prenatal Care under the Public Health Act. After the more strenuous business sessions the doctors and their ladies sat down to enjoy a meal which was followed by entertainment.



From 17th to 20th October I was privileged to be included in a gathering arranged by the Associated Medical Services to consider medical economics. The President, Dr. Baker, and Managing Director, Dr. J. A. Hannah, welcomed to Camp Mazinaw representatives from Departments of Health and officials of voluntary medical organizations, to discuss freely with those engaged in group or clinic practice, in voluntary prepayment medical or welfare schemes, matters of common concern in providing satisfactory medical services. Dr. E. S. Moorhead, Medical Director of Manitoba Medical Service, was present from this Province.

The Executive meeting of the Canadian Medical Association was held in Ottawa on 21st and 22nd October, when Doctors F. G. McGuinness and P. H. McNulty were the Manitoba representatives. It was a grand opportunity to see the 'Cabinet' of our parent body in action. Our Division is honoured that Winnipeg has been chosen as the meeting place, 23rd to 27th June, 1947, for the 78th annual conclave of the Canadian Medical Association and that Dr. Fred G. McGuinness will direct the affairs of that body for the year 1947-48.



Manitoba Hospital Association

In conjunction with the 25th Annual Convention the Association sponsored the First Institute for Hospital Administrators and Trustees. Meetings were held in the Colonial Room of the Royal Alexandra Hotel from 28th October to 2nd November, 1946.

To Dr. O. C. Trainor, President of the Manitoba Hospital Association, and his Committee in Charge of the Institute, Mr. Donald M. Cox, Chairman; His Honor, Judge J. M. George; Doctors Harry Coppinger and Gerald S. Williams, Winnipeg, are due congratulations for the success achieved.

Approximately 150 persons attended the course, which included lectures and discussions by a carefully selected faculty, and visits to local hospitals.

Director-in-Chief of the Institute was Dr. Malcolm T. MacEachern, of Chicago, Ill., Associate Director, American College of Surgeons, and Professor of Hospital Administration, Northwestern University. The Canadian Hospital Council was capably represented by the genial Secretary, Dr. Harvey Agnew, of Toronto.

At the election of officers for the Manitoba Hospital Association for 1946-47, Dr. O. C. Trainor was re-elected President, while Doctors H. Coppinger and G. S. Williams were again appointed to the Board of Directors.



Local Programme Committee for Annual Meeting of C.M.A. at Winnipeg in June, 1947

A meeting was held at the home of the President-Elect, Dr. Fred G. McGuinness, on Monday evening, 4th November, 1946. Doctors Frank Mathewson, Chairman, and Kenneth Trueman, Secretary, are contacting the various sections who may be holding sessions. Dr. D. C. Aikenhead was present at the meeting and reported for the Committee on Housing.

C.M.A. Advisory Committee to D.V.A.

At the first meeting of the C.M.A. Advisory Committee to the Department of Veterans Affairs, which was held in the Medical Arts Club Rooms, Winnipeg, Thursday evening, 7th November, 1946, there was a full attendance under the chairmanship of Dr. Fred G. McGuinness. Dr. J. Laurie Lamont, Departmental District Medical Officer, outlined the terms of reference and presented several cases for discussion.

Brandon and District Medical Association

On November 6th the Secretary was privileged to attend the meeting of the Brandon and District Medical Society, the minutes of which appear elsewhere in the Review. It was indeed a treat to see this enthusiastic group in action and it is hoped that this is the precursor to several more visits to this and other medical society meetings.

Grace Hospital Clinical Luncheon

Approximately 25 doctors attended the Clinical Luncheon at Grace Hospital on Tuesday, 19th November, 1946. Dr. Benner presided and introduced the new Secretary of the Manitoba Medical Association. The Superintendent and Dr. Ellen Douglass paid tribute and presented parting gifts from the staff to Major E. Acey, who is being

transferred to Toronto after being associated with the Hospital for 17 years. Major Acey replied fittingly.

A case of Traumatic Perforation of the Bowel was presented by Doctors E. H. Brotman and S. L. Markovits, Dr. J. W. Simpson reviewing the X-ray findings.

Dr. H. C. Hutchison contributed a brief, but comprehensive, outline on Anaesthesia Risks.

Several members contributed to the discussion of each paper.

Committee on Economics

The first session of the Committee on Economics of the Manitoba Division for 1946-47 was held on 19th November, 1946, and was of four hours duration—and fortnightly meetings are anticipated! Perhaps not all members of the profession realize the amount of voluntary effort which has been made on their behalf for many years, but I believe most doctors do appreciate the devotion of their confreres.

Perhaps the Editor will excuse the well-known national characteristic which prompts me to use the column of this page to wish one and all the Season's Compliments—"Merry Christmas and Happy New Year!"

M. T. M.

Medical Happenings for December

Tuesday, 3—

Luncheon, Misericordia Hospital, 12:30 p.m.

Wednesday, 4—

Tumor Clinic, Winnipeg General Hospital, 9:00 a.m.

Thursday, 5—

Luncheon, Winnipeg General Hospital, 12:30 p.m.

Wednesday, 11—

Tumor Clinic, Winnipeg General Hospital, 9:00 a.m.

Thursday, 12—

Ward Rounds, Children's Hospital, 11:00 a.m.

Thursday, 12—

Luncheon, St. Boniface Hospital, 12:30 p.m.

Friday, 13

Tumor Clinic, St. Boniface Hospital, 10:00 a.m.

Tuesday, 17—

Luncheon, Grace Hospital, 12.30 p.m.

Wednesday, 18—

Tumor Clinic, Winnipeg General Hospital, 9:00 a.m.

Thursday, 19—

Ward Rounds, Children's Hospital, 11:00 a.m.

Thursday, 19—

Luncheon, Winnipeg General Hospital, 12:30 p.m.

Friday, 20—

Tumor Clinic, St. Boniface Hospital, 10:00 a.m.

Friday, 20—

Meeting, Winnipeg Medical Society, 8:15 p.m., Medical College.

Tuesday, 24—

Luncheon, St. Joseph's Hospital, 12:30 p.m.

Wednesday, 25—

Tumor Clinic, Winnipeg General Hospital, 9:00 a.m.

Thursday, 26—

Ward Rounds, Children's Hospital, 11:00 a.m.

Thursday, 26—

Luncheon, St. Boniface Hospital, 12.30 p.m.

Friday, 27—

Tumor Clinic, St. Boniface Hospital, 10:00 a.m.

Friday, 27—

Luncheon, Victoria Hospital, 12:30 p.m.

Personal Notes and Social News

Dr. and Mrs. Alastair D. Maclean, of Virden, Man., wish to announce the birth of a son, Campbell Douglas, at the Virden General Hospital on November 6th, 1946.

Dr. F. R. Chown, former medical director of the Flin Flon Health unit, has been appointed medical director of the Selkirk Rural Health unit.

Dr. and Mrs. D. B. Stewart are happy to announce the birth of a son, Neil Alexander, on November 16th, 1946, at the Winnipeg General Hospital.

An event of interest to the medical profession of this province occurred on Saturday, November 16th, when the Rev. George F. Dyker, of Crescent-United Church, Winnipeg, united in marriage Jean Glover Allan and Dr. Roy Martin, of Neepawa, Man., President of the Manitoba Medical Association. The bride is the daughter of Mrs. J. Allan, of Winnipeg, and the late Mr. Allan. After a reception, held in the Tea Lounge of the Royal Alexandra hotel, Dr. and Mrs. Martin left for a honeymoon trip to Southern points. They will make their home in Neepawa.

Dr. E. Varverikos, of Selkirk, Man., has enrolled for a course in pathology at the Cook County Hospital, Chicago, Ill.

Lieut.-Col. John R. Matas, a senior medical officer with over five years service with the Royal Army Medical Corp. and the R.C.A.M.C., has returned to reserve. In July, 1945, he was mentioned in despatches for gallantry.

The Executive and members of this association extend their deepest sympathy to Drs. Ian S., Neil Bruce and Alistair D., on the recent death of their father, Dr. Neil John Maclean, who died at his home on November 13th, after a brief illness.

Dr. and Mrs. C. A. Adamson announce with pleasure the birth of their son, Christopher Arthur, on November 26th, 1946, at the Winnipeg General Hospital.

Dr. and Mrs. A. E. McGavin's (Carman, Man.) son, Donald Cameron, was married to Doceil Marjorie, daughter of the late Mr. and Mrs. G. P. Eldred, of Semans, Sask., on November 30th at Westminster United church, Winnipeg.

Dr. and Mrs. Neil Bruce Maclean, of Winnipeg, take pleasure in announcing the birth of a son, Donald Bruce, on November 7th, 1946, at the Winnipeg General Hospital.

Dr. and Mrs. John A. Gunn's elder son, Bruce, was married on October 19th to O'Dare, daughter of Mr. and Mrs. Sydney Ronald. The wedding was solemnized at St. George's church, Winnipeg.

Dr. and Mrs. D. W. Penner are pleased to announce the birth of a son, Donald Stewart, on November 12th, 1946, at the Winnipeg General Hospital.

Dr. and Mrs. H. W. Riley are happy to announce the birth of a daughter on November 6th, 1946, at the Winnipeg General Hospital.



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Each Broncho-Rectal suppository is equivalent to 15 minims Creosote... combined with guaiacol. Rectal administration enables the Creosote to be taken directly into the blood stream and carried to the bronchi and bronchioles—the absorption being so rapid that Creosote odor may be detected on the patients' breath within 30 minutes.

Broncho-Rectal suppositories are antiseptic, mildly anesthetic and deodorant.

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Oxyuriasis—Vermanica Suppositories

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Manitoba Medical Service

Manitoba Medical Service receives many letters from doctors and lay members during a month. Some are critical, even violently so; a few give useful suggestions; others have modifications which if adopted would be beneficial; as the writer sees only a part of the picture, the benefits would be very local. The frame on the wall in which is to be placed the first really complimentary opinion on the work of the administrative staff is alas still empty.

The letter which follows contains a viewpoint which I thought would interest many doctors; I have the writer's permission to publish it, and I undertook to discuss it at the same time.

"Dear Dr. Moorhead:

"In reply to your letter of September 4th, there are two important principles I would emphasize.

"The first concerns the regimentation of medical practice. The inauguration of the Manitoba Medical Service was based upon the then impending Federal health legislation. It was argued that such legislation implied control and regimentation which was undesirable, because medicine offered greater scope for initiative as individualistic enterprise.

"In your letter of September 4th the suggestion was made that the extent of examination and the frequency of visits be limited. This is the first step in control and regimentation. Where will it end? Will we have all the disadvantages of state controlled medicine without its compensating security?

"Actually the present problem is how to pay for the service rendered. There can be only one of two alternatives; more money or less service.

"The second principle deals with the honoring of the contract between the Service and the subscriber. It is axiomatic that the subscriber must understand exactly what he is paying for, and receive full service for such payment. The realization of such conditions would be incompatible with the suggested limitations."

"Regimentation and control." Will you tell me any country in the civilized world which is not making use of these two factors in varying degrees? How then can the medical profession hope to escape? The B.M.A. is a much more highly organized group than anything we have in Canada; do you think it is going to win in the battle with the most powerful and radical government that Britain has had in a long time? You can read about conditions in New Zealand and Australia, and I don't think you will find any evidence

of battles won by the doctors. To me, though you may not agree, the really important question is, will we provide the regimentation and control of our own members, or do we prefer to have it imposed upon us by a government department? If the former, then the sooner we begin practising it the better; it will come easier that way. I am sure no doctor is prepared to state that each member at all times and in every way upholds the honor of the profession. Things happen which most of us would not like to become public. Where the civil law is broken, justice steps in, but other milder offences are nobody's business, where they should be everyone's. "Where will it end." I don't know, and neither does anybody else; it would be a fearless prophet who would foretell what the condition of the world will be five years from now.

"Greater scope for initiative as an individualistic enterprise." I am not going to deal with this, because there are published at frequent intervals lists of great and enduring discoveries for the benefit of mankind, made by civil servants or scientists employed by a great organization. The cost of scientific research by the individual has become so great that it forms an insuperable obstacle to the individual. Unfortunately many half-baked discoveries by individuals are thrown on the world, and you have all had the experience of adopting them with enthusiasm to discard them later as unreliable.

"The second principle." If you can tell me how to accomplish that, you will have given valuable service. At a recent conference in the east, I listened to a leading industrialist, in whose factory a prepayment plan was in operation; he had not found the answer. Every member of our groups is given a folder, but when difficulties arise, he tells us that he did not read it, if told the terms in an introductory address, he will not remember them. We cannot blame them, for M.H.S.A. has circularized all members of our profession for years, but the same oversights keep happening. Are you, doctor, familiar with all the conditions in small print to be found in your life, fire or accident policies?

To close on a personal note; I think a great change in medical economics will take place during the next few years; it is in the hope that it will be reached by evolutionary and not revolutionary methods, that we are trying to build a road through a forest where there are many byways to lead us astray.

E. S. Moorhead, M.B.

Obituaries

Dr. Neil John Maclean

Dr. Neil John Maclean, a leading surgeon of Western Canada, died at his home on November 13, after a brief illness. Born at Lindsay, Ontario, March 17, 1870, he moved with his family to Winnipeg in 1882. He was educated in Manitoba College and graduated from Manitoba Medical College in 1898. After serving as a house surgeon in Winnipeg General Hospital he went to England where he obtained the L.R.C.P., M.R.C.S. degrees. Later postgraduate studies were pursued at Chicago, Berlin and Vienna. In his early years he was attracted by the surgery of the late Dr. Alexander Hugh Ferguson, whose life and work he set forth in the Masters of Surgery series in Surgery, Gynecology and Obstetrics. Many other articles from his pen were published in the Canadian Medical Journal and other journals.

At various times Dr. Maclean was surgeon to the Winnipeg General Hospital, St. Boniface Hospital, the Children's Hospital of Winnipeg, Tuxedo Military Hospital, and Manitoba Sanatorium at Ninette. For some time he was associate professor of surgery in Manitoba Medical College.

In addition to his British degrees he was a Fellow of the American College of Surgeons and a Fellow of the Royal College of Surgeons (Canada). He was an active member of the Western Surgical Association. He assisted in the revival

of the Canadian Medical Association after World War I.

In 1941 he organized in Winnipeg the Maclean clan and was active in bringing its membership to between 200 and 300.

After the First World War he organized the Maclean-Gunn Clinic, later the Maclean-Thorlakson Clinic, which expanded to become the Winnipeg Clinic. In this Dr. Maclean was senior consultant.

He is survived by his widow, three daughters, three sons—Dr. Ian S. Maclean and Dr. Bruce Maclean, of Winnipeg, and Dr. Alistair D. Maclean, of Elkhorn, Manitoba, and eight grandchildren. Another son, Capt. Donald S. Maclean, of the First Canadian Paratroop Battalion, died on the Normandy beaches, on D-Day, June 6, 1944.



Dr. A. J. Slater

Dr. A. J. Slater died on October 26 at the age of 73. Born in Galt, Ont., he attended the collegiate institute there, then came to Winnipeg in 1899. Five years later he graduated from Manitoba Medical College. He practised for a year in Emerson, then returned to Winnipeg and for a number of years was anesthetist at St. Joseph's Hospital. He received the bronze medal for anesthesia. Surviving him are his widow, two daughters and two sons.

Why Not a Book?

That is an easy way to settle the Christmas present problem. Not only does it give pleasure to the recipient but it helps him in his daily work and is a constant reminder of your friendship. From the books reviewed during the past months we give a selection of classics—books which, even if you are not familiar with them yourself, you can give in the complete assurance that they will

be found helpful and be enjoyed. Why not make out a list of titles and recipients? The publishers are J. B. Lippincott Co., Medical Arts Building, Montreal.

Everyday Psychiatry, Campbell	\$ 7.50
Clinical Electrocardiography, Scherf & Boyd	\$10.00
Pathology in Surgery, Foote	\$10.00
The Physician's Business, Woolfe	\$ 7.50
Diseases of the Breast, Geschickler	\$15.00



Department of Health and Public Welfare Comparisons Communicable Diseases — Manitoba (Whites and Indians)

DISEASES	1946		1945		TOTALS	
	Sept. 8 to Oct. 5	Aug. 11 to Sept. 7	Sept. 9 to Oct. 6	Aug. 12 to Sept. 8	Jan. 1 to Oct. 5, '46	Jan. 1 to Oct. 6, '45
Anterior Poliomyelitis	15	18	2	2	42	16
Chickenpox	92	35	68	18	975	1,708
Diphtheria	15	10	23	18	203	224
Diphtheria Carriers	13	5	3	5	25	32
Dysentery—Amoebic	—	—	1	—	1	1
Dysentery—Bacillary	—	—	5	—	1	14
Erysipelas	3	5	2	3	56	39
Encephalitis	1	3	1	2	5	8
Influenza	6	6	11	7	179	159
Measles	76	69	3	4	1,725	479
Measles—German	—	—	1	2	21	36
Meningococcal Meningitis	2	3	1	—	17	11
Mumps	108	70	34	38	1,992	1,262
Ophthalmia Neonatorum	—	—	—	—	—	—
Pneumonia—Lobar	10	7	6	6	130	108
Puerperal Fever	—	—	—	—	2	1
Scarlet Fever	50	18	47	33	482	564
Septic Sore Throat	2	4	3	2	32	22
Smallpox	—	—	—	—	—	—
Tetanus	—	—	—	1	1	3
Trachoma	—	—	1	—	2	5
Tuberculosis	101	84	56	49	786	615
Typhoid Fever	1	3	3	4	18	38
Typhoid Paratyphoid	1	—	—	1	3	6
Typhoid Carriers	—	—	—	1	2	3
Undulant Fever	—	1	—	—	17	11
Whooping Cough	36	25	20	19	268	263
Gonorrhoea	206	201	214	224	1,901	1,647
Syphilis	48	50	41	48	516	449
Diarrhoea and Enteritis, under 1 yr.	32	16	4	2	185	14

DISEASES

(White Cases Only)

*Approximate population.

	*736,000 Manitoba	*3,825,000 Ontario	*906,000 Saskatchewan	*2,972,000 Minnesota
Anterior Poliomyelitis	15	100	10	508
Meningococcal Meningitis	2	4	—	1
Chickenpox	92	340	33	—
Diarrhoea and Enteritis	32	—	—	—
Diphtheria	15	24	6	14
Erysipelas	3	3	1	—
Influenza	6	8	—	—
Jaundice, Infectious	1	42	—	—
Measles	76	205	145	5
German Measles	—	24	4	—
Mumps	108	377	194	—
Pneumonia, Lobar	10	—	2	—
Scarlet Fever	50	166	7	58
Septic Sore Throat	2	—	1	—
Tuberculosis	101	180	35	8
Typhoid Fever	1	8	4	1
Typhoid Para-Typhoid	1	2	—	—
Undulant Fever	—	7	—	6
Whooping Cough	36	222	29	49
Dysentery—Amoebic	—	1	—	7
Dysentery—Bacillary	—	2	—	—
Typhoid Carrier	—	—	1	—
Malaria	—	—	1	—
Gonorrhoea	206	533	—	—
Syphilis	48	204	—	—
Diphtheria Carrier	13	—	—	—

Four-Week Period, Sept. 8th to Oct. 5th, 1946

DEATHS FROM COMMUNICABLE DISEASES

For the Month of September, 1946

Urban — Cancer, 49; Influenza, 1; Pneumonia, Lobar, 4; Pneumonia (other forms), 5; Poliomyelitis, 1; Syphilis, 1; Tuberculosis, 5; Diarrhoea and Enteritis (under 2 years), 2. Other deaths under 1 year, 13. Other deaths over 1 year, 156. Stillbirths, 19.

Rural — Cancer, 25; Lethargic Encephalitis, 1; Pneumonia (other forms), 6; Tuberculosis, 17; Cerebrospinal Meningitis, 1; Mumps, 1; Diarrhoea and Enteritis (under 2 years), 4. Other deaths under 1 year, 18. Other deaths over 1 year, 121. Stillbirths, 10.

Four-Week Period, Oct. 6 to Nov. 2nd, 1946

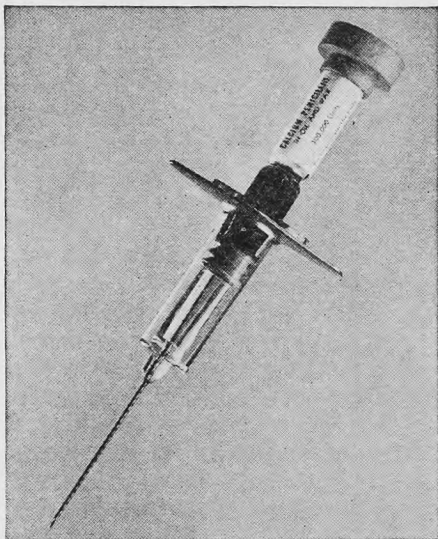
Indians — Pneumonia (other forms), 1; Tuberculosis, 4. Other deaths under 1 year, 3. Other deaths over 1 year, 2. Stillbirths, nil.

DISEASES

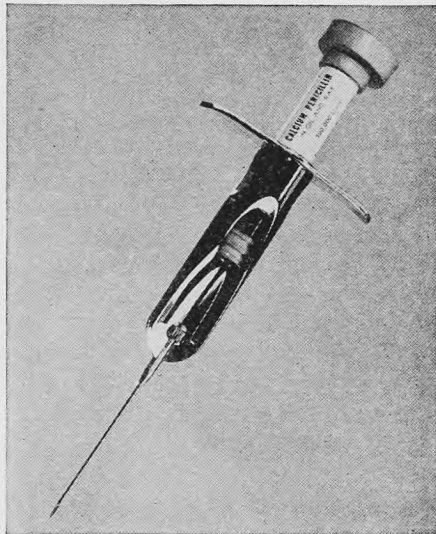
*Approximate population.

	*736,000 Manitoba	*3,825,000 Ontario	*906,000 Saskatchewan	*2,972,000 Minnesota
Anterior Poliomyelitis	6	81	2	208
Meningococcal Meningitis	1	2	—	4
Chickenpox	161	699	85	—
Diphtheria	18	60	4	35
Diphtheria Carrier	3	—	—	—
Erysipelas	—	9	—	—
Influenza	3	11	1	—
Jaundice, Infectious	—	42	—	—
Measles	106	283	333	14
German Measles	1	18	4	—
Mumps	90	674	248	—
Pneumonia, Lobar	6	—	—	—
Scarlet Fever	42	242	3	98
Septic Sore Throat	1	62	—	—
Smallpox	—	—	—	1
Tuberculosis	106	178	30	9
Typhoid Fever	2	4	—	1
Typhoid Para-Typhoid	—	3	—	—
Typhoid Carrier	1	—	—	—
Undulant Fever	—	1	—	9
Whooping Cough	30	235	11	28
Dysentery—Amoebic	—	1	—	3
Dysentery—Bacillary	—	3	—	—
Diarrhoea and Enteritis	17	—	—	—
Gonorrhoea	171	543	—	—
Syphilis	66	305	—	—

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Disposable Plastic Syringe



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Since the first publication by Romansky of the satisfactory blood levels of penicillin obtained and maintained for a period of eighteen hours following the intramuscular injection of 300,000 units of calcium penicillin in peanut oil and beeswax, both laboratory investigations and collaborative clinical studies in the treatment of gonorrhea and pneumonia have been made by the Connaught Medical Research Laboratories. It has been widely confirmed that penicillin prepared according to the Romansky formula maintains the blood levels which are required in the treatment of gonorrhea and certain other conditions, and permits of one injection every twelve to twenty-four hours. For the convenience of the physician, two types of syringe-packages are supplied by the Laboratories, as follows:—

DISPOSABLE PLASTIC SYRINGE PACKAGE

Included in this package is a sterile B-D* Disposable Cartridge Syringe, ready for immediate use with a special cartridge containing 300,000 International Units of calcium penicillin in 1 cc. of peanut oil and beeswax. The plastic syringe is discarded after use.

METAL CARTRIDGE SYRINGE PACKAGE

This package includes a B-D* Metal Cartridge Syringe, two sterile 20-gauge needles, and a cartridge containing 300,000 International Units of calcium penicillin in 1 cc. of peanut oil and beeswax. The metal syringe is designed for repeated use with readily changeable needles and cartridges. Replacement cartridges of calcium penicillin in oil and wax may be obtained separately from the Laboratories.

* T. M. Reg. Becton, Dickinson & Co.

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College of Physicians and Surgeons of Manitoba

Annual Meeting

Winnipeg, Man., Oct. 16, 1946

The Sixty-First Annual Meeting of the Council of the College of Physicians and Surgeons of Manitoba was held Wednesday, October 16th, 1946, at 2.00 o'clock p.m., at the Medical College, Winnipeg.

The President, Dr. C. W. Wiebe, called the meeting to order.

1. Roll Call.

The following members were present: Dr. A. A. Alford, Dr. B. D. Best, Dr. W. G. Campbell, Dr. C. S. Crawford, Dr. Edward Johnson, Dr. J. M. Lederman, Dr. I. Pearlman, Dr. W. S. Peters, Dr. J. S. Poole, Dr. J. Prendergast, Dr. F. A. Rybak, Dr. W. F. Stevenson, Dr. C. B. Stewart, Dr. C. H. Wiebe, Dr. T. H. Williams.

The President, Dr. C. W. Wiebe, introduced the members of the Council.

2. Reading of the Minutes and Their Approval.

The minutes of the Special Meeting of the Council held May 15th, 1946, were presented to the Council.

Motion:

Moved and Seconded "THAT the Minutes of the Special Meeting of the Council held May 15th, 1946, be accepted as having been read." Carried.

Business Arising From the Minutes of the Special Council Meeting Held May 15th, 1946

(a) Consideration of the Report of the Education Committee.

Dr. A. A. Alford, Chairman of the Education Committee, presented the following report:

"The more study that is given to this subject, the more involved it seems to become. The original resolution, 'That the Educational Committee be instructed to consider how highly qualified specialists may be licensed to practice in the Province of Manitoba and report at the next meeting of the Council.' A report was given at the Annual Meeting of the Council in October, 1945. A copy of the report was given to each member of the Council for further study, till the May meeting of the Council in 1946. At this meeting the matter was referred back to the Educational Committee for further study.

"It is the opinion of the Committee, that the Council of the College of Physicians and Surgeons receive their authority for licensing members under the Medical Act, and sections 30 and 31 specifically states who shall be licensed. If the Act is our sole guide for the deliberations of the Council then the Medical Act would have to be changed, to admit the different standards of learning as a basis of licensure.

"Consideration of information, from other Medical Councils across Canada, regarding our previous report, it would appear that they were considering standing of specialists for certification, in the provinces with regard to certain specialties and not licensure.

"We are of the opinion that highly qualified specialists, who cannot comply with standards outlined in Section 30 and 31 of the Medical Act, cannot be admitted to Licensure with the Province of Manitoba, unless the Medical Act be changed setting forth a wider basis of standards for licensure.

"If it is desired by the Council that this matter be considered further, your Committee would suggest that the subject be referred to the Legislative Committee for further action."

Respectfully submitted,

Dr. A. A. Alford,
Dr. B. D. Best,
Dr. W. F. Stevenson.

Motion:

Moved and Seconded "THAT the report of the Education Committee be adopted." Carried.

(b) Re the Application for Registration of Dr. F. L. Jamieson to the Medical Council of Canada.

Dr. J. S. Poole, representative to the Medical Council of Canada, stated that this matter was included in his report as representative to the Medical Council of Canada.

(c) Legal Control of Who Shall Issue Radium or Its Emanations for Therapeutic Purposes.

Dr. W. G. Campbell reported that he had written to the Dominion Department of Health as requested by the Council at the May meeting. He stated that he had received a reply informing him that the Radium Luminous Industries Ltd. was incorporated in the Province of Ontario in May, 1942, and that it is not a Crown Company. The letter also stated that the Dominion Department of National Health and Welfare did not have the authority to restrict the use of radium to specified people, and that the matter should be discussed with the Deputy Minister of Health for the Province of Manitoba.

Motion:

Moved and Seconded "THAT the Registrar make inquiries as to whether the Radium Luminous Industries Ltd. still has a branch office in Winnipeg, and also contact Dr. F. W. Jackson, Deputy Minister of Health, in the matter." Carried.

(d) Reports on the Meeting of the Registrars at Banff.

Dr. W. G. Campbell presented the following report:

"A meeting of the Registrars of the various Colleges of Physicians and Surgeons of Canada was arranged to meet at Banff during the session of the meeting of the Canadian Medical Association. This meeting was held June 13, 1946, and the following representatives were present: British Columbia, Dr. A. J. MacLachlan, Registrar, Alberta; Dr. W. Bramley-Moore, Registrar, Saskatchewan, Dr. J. G. K. Lindsay, Registrar; Quebec, Dr. Jean Paquin, Registrar; Ontario, Dr. G. A. Ramsay, President; Manitoba, Dr. W. G. Campbell, Registrar.

Later Dr. J. Fenton Argue, Registrar of the Medical Council of Canada, entered into the discussion on several of the points raised at the meeting.

"The members appointed Dr. W. G. Campbell as Chairman, and Dr. J. G. K. Lindsay as Secretary.

"The meeting was called to order at 2.00 p.m., and adjourned at 5.30 p.m. Discussions of the subjects continued up to 6.30 p.m., and subsequently wherever two or three gathered together.

"Letters were received from other Registrars regretting their absence.

"The following subjects were on the agenda:

1. Registration of medical men full time employed by Federal Government Departments.
2. Registration of internes in hospitals.
3. An understanding between the various Councils on the question of issuing enabling certificates or licensing a number of European doctors who are at present in Canada.
4. An effort might be made to encourage UNRRA to rehabilitate European doctors in their native countries.
5. Consulting or working with licensed chiropractors, osteopaths, chiropodists, etc.
6. Some concerted action relating to who should be allowed to use radium.
7. Improved uniformity of the medical acts of the various provinces.
8. A study of the proposed Health Insurance legislation of the various provinces, especially in its relationship to the medical practitioners, and other related subjects of socialized medicine.
9. Notification of all the Councils of erasures from registers, and a summary of the decision of the Council in each case, including the cost as well as the conditions of reinstatement.

"Every question submitted received due consideration. Perhaps the most outstanding enthusiasm was over questions 1, 2, 3, 5, 7 and 9.

"Before adjournment it was unanimously agreed that a similar meeting should be held in Winnipeg during the assembly of the Canadian Medical Association to further crystallize the discussions at this meeting, as well as other matters that might be suggested. It was also suggested

that the President, or other officers of each Council, be invited to attend the proposed meeting.

"The meeting then adjourned."

Motion:

Moved and Seconded "THAT the report of the meeting of the Registrars be adopted." Carried.

Dr. Campbell stated that the Registrars at the meeting in June agreed that a meeting should be held in Winnipeg during the meeting of the Canadian Medical Association in June, 1947. He stated that if the Council approved, he would take it upon himself to try and have the Canadian Medical Association arrange their programme so there would be a period for the meeting of the Registrars. He read a letter received from Dr. Jean Paquin, Registrar of the College of Physicians and Surgeons of Quebec, stating that he had been appointed representative of the Quebec College to meetings of the Registrars for the term 1946 to 1950.

Motion:

Moved and Seconded "THAT the Registrar be instructed to make arrangements to extend invitations to the other Registrars and Presidents or Vice-Presidents of the Colleges of Physicians and Surgeons across Canada, to meet here at the time of the next Canadian Medical Association Convention in June, 1947." Carried.

3. Reports of Officers and their Consideration.

(a) Registrar's Report.

"At this, the Sixty-First Annual Meeting of the Council of the College of Physicians and Surgeons of Manitoba, May I, as your Registrar, heartily thank all the members of the preceding Council for their courtesy and co-operation. May I welcome to this assembly the newly elected members, and trust they will assume their duties seriously.

"New problems are constantly arising with the advances of Medicine and changing types of practice of the profession.

- (a) Registration of Certified Specialists is a matter that should require deliberation.
- (b) Government and socialized Medicine is on our doorstep and will undoubtedly require attention from this Council. To what extent do Government Health Centres and Diagnostic Clinics encroach upon the practice of the rural physicians.
- (c) The recent amendment of the Marriage Act is already full of complications requiring your attention.
- (d) The Basic Science Act is not altogether satisfactory so far as medical registration is concerned.

"These are mentioned as only a few problems.

"The joint meeting of the Manitoba Medical Association and the College of Physicians and Surgeons on the evening of September 17, 1946,

was very poorly attended. The discussion centred wholly about an editorial appearing in the September issue of the Manitoba Medical Association Review. My opinion is that this was the most unsatisfactory joint meeting we have ever had.

"May I thank the Council for allowing an expense account for attending the Registrar's meeting at Banff. A report of the meeting will be given today.

"The Council's office duties are constantly increasing of which I wish to speak later.

"May I draw to the attention of the Council, as I have done on several occasions, the desirability of having a publication of the Register, consisting of simply the names and addresses of the physicians in the Province of Manitoba. Perhaps by another year the complete register could be printed after the returned army officers have completed their rehabilitation.

"Number of Registrations—One Hundred and Forty-One. (141).

"Number of registered doctors as of October 16th, 1946:

Greater Winnipeg	491
Outside Winnipeg	223
	<hr/>
	714
Annual Fees	1,090.00
Licenses	14,100.00
Reinstatement Fee	100.00
Certificates:	
M.C.C.—47 @ \$5.00	235.00
G.M.C.—11 @ \$5.00	55.00
Medical Student Registration:	
49 @ \$1.00	49.00
	<hr/>
	\$15,629.00

"The following is a list of the members of our College who have died since last reporting:

Carter, L. J., Brandon, Man.
 Clark, W. H., Portage la Prairie, Man.
 Dorman, O. C., Winnipeg, Man.
 Elliott, W. J., Brandon, Man.
 Gorrell, W. R., Winnipeg, Man.
 Groff, H. K., Winnipeg, Man.
 Hastings, J. H. E., Winnipeg, Man.
 Hutchison, J. N., Winnipeg, Man.
 Lenev, J. M., Winnipeg, Man.
 MacCharles, R. W., Winnipeg, Man.
 MacDonnell, A. J., Victoria, B.C.
 Medd, A. E., Winnipegosis, Man.
 McEachern, J. D., Winnipeg, Man.
 Moody, A. W., Winnipeg, Man.
 Murray, A. A., Winnipeg, Man.
 Ryall, E. J., Winnipeg, Man.
 Trimble, N. G., The Pas, Man.
 Rogers, W., Winnipeg, Man.

Respectfully submitted,

Dr. W. G. Campbell

Motion:

Moved and Seconded "THAT the Registrar's report be adopted." Carried.

Business Arising From the Registrar's Report (1) Amendment to the Marriage Act.

Dr. Campbell reported that several problems in connection with the recent amendment to the Marriage Act had been brought to his attention. He stated that there was no set fee for taking a blood test, and that at the meeting of the Manitoba Medical Association Executive on Sunday, October 13th, 1946, it was decided that the fee of Five Dollars (\$5.00) should be charged each individual. It was also pointed out that the blood test must be from a qualified medical practitioner, registered in the Province of Manitoba. A person from another province who wishes to get married in Manitoba, must go to some doctor who is on the Manitoba Medical Register. Another point brought before the Council was that the Act states that the report of the blood test must be handed directly to the individual concerned. It was suggested that the report be mailed to each person, thus saving a second trip to the doctor's office. Also the specimen must be reported on by the Laboratory in Manitoba, even though it comes from some other part of the country.

Dr. Campbell reported that a jewellery firm had phoned him that a Winnipeg doctor had given them some of his cards, asking them to give one to each individual asking for a marriage license. Dr. Campbell asked for some direction from the Council should a matter like this come up again. The Council considered that this was a breach of medical ethics.

Motion:

Moved and Seconded "THAT this matter be referred to the Legislative Committee to look into these problems immediately, and report back to the Executive Committee and the Executive Committee report the findings to the Manitoba Department of Health." Carried.

(2) The Basic Science Act.

Dr. Campbell reported that there was still considerable delay in connection with the granting of the Basic Science Credit Certificates to graduates outside of Manitoba. It is understood that the Committee appointed by the University Senate to consider applications for these certificates will eventually have required data available, so unnecessary delays will be overcome.

(3) Health Units.

It was reported that some rural practitioners are complaining about the Health Centers taking their positions as health officers. Dr. Crawford stated that the doctors around Flin Flon and The Pas had found these centres very helpful in that district.

(b) Treasurer's and Auditor's Report.**Price, Waterhouse & Co.**

The College of Physicians and Surgeons of
Manitoba,

Winnipeg, Manitoba.

Dear Sirs:

In accordance with the instructions of your Registrar, we have made an examination of the books and records of The College of Physicians and Surgeons of Manitoba for the year ending September 30, 1946, and for your information we submit the following statements:

Gordon Bell Memorial Fund **Exhibit I**
The Investment Account **Exhibit II**
Current Account **Exhibit III**

In connection with these statements and our examination of the records we would offer the following comments.

The investments and funds of the College as at September 30, 1946, further particulars of which are outside of Manitoba. It is understood that summarized as follows:

Gordon Bell Memorial Fund:	
Dominion of Canada Bonds (Par value \$22,900.00)	\$22,900.00
Uninvested funds on deposit with the Bank of Toronto	1,794.81
	<u>\$24,694.81</u>
Investment Account:	
Dominion of Canada Bonds (Par value \$35,500.00)	\$35,800.35
Uninvested funds on deposit with the Bank of Toronto	4,777.70
Amount advanced to the Current Account	8,821.79
	<u>49,399.84</u>
Current Account:	
Balance on deposit with the Bank of Toronto as per books, September 30, 1946	\$11,320.12
Deduct —Amount due to the Investment Account	8,821.79
	<u>2,498.33</u>
	\$76,592.98

Dominion of Canada Bonds

We attended at the safety deposit vaults of the Bank of Toronto on October 7, 1946, and, in conjunction with Dr. T. D. Wheeler and Dr. W. G. Campbell, examined the Dominion of Canada bonds of a par value of \$22,900.00 as shown under the heading of Gordon Bell Memorial Fund, and bonds of a par value of \$35,500.00 shown under the heading of Investment Account. With the exception of four \$100.00 bonds under the heading of only as to principal, the bonds examined by us were seen to be fully registered in the name of Gordon Bell Memorial Fund, which are registered The College of Physicians and Surgeons of Manitoba.

During the year a Dominion of Canada Ninth Victory Loan bond was purchased for the Gordon Bell Memorial Fund, as authorized in the minutes of the Annual Meeting held on October 17, 1945. Particulars of this transaction, together with the opening and closing balance of the investments are shown below:

Investments—September 30, 1945	\$21,900.00
Add —3 per cent Victory Bond No. P7 M56243 due September 1, 1966, purchased at par	1,000.00

Investments—September 30, 1946	<u>\$22,900.00</u>
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Funds on Deposit

The balances on deposit with the Bank of Toronto at September 30, 1946, in the two savings accounts and the current account have been reconciled with a certificate received by us direct from the bank.

Receipts and Disbursements

With the exception of the funds on deposit in the current account, which account is non-interest bearing, we have seen that interest has been received on all investments and funds. In the case of the current account we have checked the stubs of receipts issued by the Registrar in connection with licenses, certificates and annual fees against the book entries but have not taken any further steps to verify the correctness of the contributions from members of the College.

In connection with the Gordon Bell Memorial Fund we are informed that a fellowship was not awarded for the year 1945-1946 with the result that, with the exception of the above-mentioned purchase of a Victory Loan bond, there were no disbursements from this fund during the fiscal year ending September 30, 1946.

There were no disbursements recorded in the Investment Account during the year under review.

With regard to disbursements from the current account we have seen cancelled cheques or other evidence in support of the items appearing in the books. As the statements submitted relate only to cash receipts and disbursements, we have not gone into the question of any arrears in respect of fees outstanding or outstanding liabilities as at September 30, 1946.

During the years ending September 30, 1944 and 1945 advances from Current Account, totalling \$5,000.00, were made by the College to the Manitoba Medical Service Association; these advances were written off as "grants" in the years during which they were made. During the year ending September 30, 1946, an amount of \$1,000.00 was received from the Manitoba Medical Service Association as a partial repayment of the above-mentioned advances, and this amount is shown as a separate item on the attached Current account statement of Receipts and Disbursements.

As will be noted from the attached statements, the advance from the Investment Account to the Current Account was reduced by a repayment of \$1,000.00 during the year under review. No interest has been charged to Current Account in respect

of the moneys advanced to it by the Investment Account.

We shall be pleased to furnish you with any additional information you may desire in regard

Council Meeting,
October 16, 1946.

Exhibit I

The College of Physicians and Surgeons of Manitoba Gordon Bell Memorial Fund

Statement of the Fund September 30, 1946 Investments

Dominion of Canada bonds in the name of The College of Physicians and Surgeons of Manitoba:	
Fully registered:	
3 per cent Victory Loan, due 1951.	
1 bond of \$500.00 numbered K4 Z020847, carried at par	\$ 500.00
3 per cent Victory Loan due 1957.	
1 bond of \$1,000.00 numbered L4 M39923, carried at par	1,000.00
3 per cent Victory Loan due 1966.	
1 bond of \$1,000.00 numbered P7 M56243, carried at par	1,000.00
4½ per cent Conversion loan due 1958.	
2 bonds of \$10,000.00 each, numbered X4677 and X4678, carried at par	20,000.00
Registered as to principal:	
3 per cent Victory Loan due 1951.	
4 bonds of \$100.00 each numbered K4 A169573, A169574, A169575 and A169576, carried at par	400.00
	\$22,900.00
Funds on deposit with the Bank of Toronto	1,794.81
	\$24,694.81

Accounted for

Balance of the fund, October 1, 1945:	
Invested	\$21,900.00
Uninvested	1,806.86
	\$23,706.86
Increase during the year ending September 30, 1946, being excess of revenue receipts over disbursements	987.95
	\$24,694.81

Statement of Transactions Year Ending September 30, 1946

Balance of uninvested funds, Oct. 1, 1945	\$ 1,806.86
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Revenue Account

Receipts:	
Interest on Dominion of Canada Bonds	\$ 982.00
Interest in uninvested funds	5.95
	987.95
	\$ 2,794.81

Investment

Dominion of Canada 3 per cent Victory Loan bond due September 1, 1966, purchased at par	1,000.00
Balance, September 30, 1946	\$ 1,794.81

Exhibit II

The College of Physicians and Surgeons of Manitoba The Investment Account

Statement of the Fund September 30, 1946 Investments

Dominion of Canada bonds fully registered in the name of The College of Physicians and Surgeons of Manitoba:	
4½ per cent loan due 1946:	
3 bonds of \$10,000 each, numbered X0522, X0523 and X0527 and 1 bond of \$5,000.00 numbered V0419, aggregate par value \$35,000.00 carried at a net book value of	\$35,300.35
3 per cent Victory Loans due 1957.	
1 bond of \$500.00 numbered L4 Z45631 carried at par	500.00
	\$35,800.35
Funds on deposit with the Bank of Toronto	\$ 4,777.70
Amount of advances to the Current Account	8,821.79
	\$13,599.49
	\$49,399.84

to the attached statements.

Yours very truly,

Price, Waterhouse & Co.

Accounted for

Balance of the fund, October 1, 1945:	
Invested	\$35,800.35
Uninvested	2,174.82
Amount of advances to the Current Account	9,821.79
	\$47,796.96
Increase during the year ending September 30, 1946, consisting of revenue receipts	1,602.88
	\$49,399.84

Statement of Transactions Year Ending September 30, 1946

Balance of uninvested funds, October 1, 1945	\$ 2,174.82
Add—Amount repaid by the Current Account during the year	1,000.00
	\$ 3,174.82

Revenue Account

Receipts:	
Interest on Dominion of Canada bonds	\$ 1,590.00
Interest on uninvested funds	12.88
	1,602.88
Balance, September 30, 1946	\$ 4,777.70

Exhibit III

The College of Physicians and Surgeons of Manitoba Current Account

Statement of Cash Receipts and Disbursements From October 1, 1945, to September 30, 1946

Receipts

Licenses	\$14,100.00
Certificates:	
M.C.C.	\$ 235.00
G.M.C.	55.00
	290.00
Annual fees	1,090.00
Medical students' registration fees	49.00
Reinstatement fee	100.00
	\$15,629.00

Disbursements

Salaries:	
Registrar—Dr. W. G. Campbell	\$ 1,200.00
Treasurer—Dr. T. D. Wheeler	200.00
Secretary—Miss Jean Allison	498.24
	\$ 1,898.24
Meetings:	
Annual, October, 1945	\$ 334.20
Special, May, 1946	266.00
Executive Committee	36.70
	636.90
Grants:	
Medical Library	1,500.00
Janitor's services—annual and special meetings	10.00
Office rental	300.00
Insurance premiums	22.50
Auditor's fee	75.00
Printing and stationery	193.86
Postage	120.00
Exchange on cheques	7.35
Miscellaneous office expenses	26.75
Expenses re Medical convention	125.85
Business tax	22.39
General expense	6.00
	4,944.84
Excess of ordinary receipts over ordinary disbursements for the year	\$10,684.16
Add—Amount repaid by Manitoba Medical Service Association—being partial repayment of amounts advanced in prior years	1,000.00
	\$11,684.16
Deduct—Amount repaid to the Investment Account	1,000.00
	\$10,684.16



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The College of Physicians and Surgeons of Manitoba Current Account

Statement of Cash Receipts and Disbursements From October 1, 1945, to September 30, 1946

Summary

Cash in bank as per books, October 1, 1945	\$ 635.96
Add —Excess of receipts over disbursements	10,684.16
Balance of cash in bank as per books, September 30, 1946	\$11,320.12
Deduct —Amount due to the Investment Account	8,821.79
Current Account surplus as at September 30, 1946	\$ 2,498.33
Balance in bank account with the Bank of Toronto, September 30, 1946	\$11,370.12
Deduct —Outstanding cheque: Dr. T. Digby Wheeler	50.00
	\$11,320.12

As Dr. T. Digby Wheeler was not present at this meeting, Dr. W. G. Campbell gave a brief summary, consideration being given to:

- Gordon Bell Memorial Fund.
- The Investment Account.
- The Current Account.

Motion:

Moved and Seconded "THAT the Treasurer's and Auditor's reports be adopted." Carried.

4. Reports of Standing Committees and Their Consideration.

(a) Executive Committee.

No meeting.

(b) Registration Committee.

Dr. W. G. Campbell, Chairman, presented the following report:

During the past year the report of each committee meeting has been sent to the members of the Council, and also has been published in the Manitoba Medical Review. Since the last Annual Meeting in October, 1945, there have been 16 meetings of this Committee, 8 of which were held previous to the meeting in May, and 8 since that date.

Motion:

Moved and Seconded "THAT the minutes of the Registration Committee meetings be accepted." Carried.

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For further information, write: Harvey Agnew, M.D., President, A.P.A.A., 280 Bloor Street West, Toronto 5, Canada, or to F. H. Redewill, M.D., Secretary of the A.P.A.A., or to the sponsor, Mead Johnson and Co., Evansville 21, Indiana, U.S.A.